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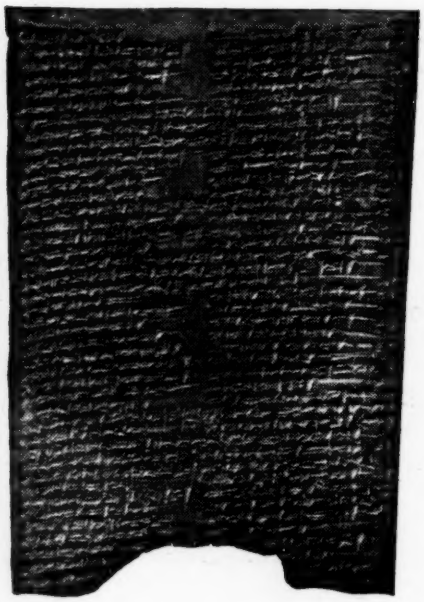

**A BOOK FROM THE ROYAL LIBRARY OF NINEVEH.**—The great empire builders of Assyria turned their energies, in the brief intervals between their military campaign, to the arts of peace. They may truly be termed pioneers in education. Thus, Sargon formed the nucleus of a library, to which Esarhaddon and Sennacherib later made contributions, while Ashurbanipal set himself the task to make a collection, which should include thousands of volumes. He sent scribes to all the ancient cities of Babylonia and Assyria, to copy every important work, upon every subject they could find. From two rooms in the ruins of his palace, more than 30,000 of the clay tablets, which were the books of the Mesopotamians, were excavated in the latter half of the nineteenth century. Ashurbanipal meant the books he collected to be read, and so he caused "dictionaries" to be compiled, consisting of vocabularies by means of which the old Sumerian language, in which many of the tablets were written, could be translated into Assyrian. The tablets seem to have been classified and labelled, and they were probably arranged upon shelves. The various classes of works could easily be recognised by their format, legends, incantations, grammatical texts and various books of reference being written upon large tablets in several columns, while the small pillow-like tablets represent astrological reports, letters and other documents. The tablet here reproduced forms a chapter in a book consisting of several tablets; it contains the story of the fight between Marduk and Tiamat. We owe a great debt to Ashurbanipal, for his library forms the chief source of Babylonian writings.
**Date : c. 668-626 B.C.**

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# The Mackenzie Davidson Lecture

ON

# THE INFLUENCE OF RADIOLOGY UPON OUR CONCEPTIONS OF DISEASE.

BY

SIR THOMAS HORDER, BT., M.D., F.R.C.P.,
PHYSICIAN TO ST. BARTHOLOMEW'S HOSPITAL.

THE Mackenzie Davidson Lecture commemorates annually the life and work of a distinguished pioneer in the field of radiology. It was thought by those who founded the lecture that it was an additional and an appropriate tribute to the memory of the man they sought to honour, who combined a true scientific spirit with the exercise of the healing art, that the lecturer should be alternately a pure scientist and a member of some branch of the medical profession. This, rather than any merit of my own, explains why the honour and the obligation of delivering the lecture have fallen to me. I am here to carry on, however unworthily, the tradition which you have established, and I follow haltingly in the footsteps of such distinguished men as Professors Rutherford, Halliburton, and George, and Drs. Aston and Kaye. This explanation will, I am sure, entitle me to your indulgence.

As a physician it has been my privilege to be very closely associated with the students and exponents of radiology ever since the science had its birth. I have therefore had full opportunities of watching its progress, from the small beginnings of the nineties to the great developments of the present time. I am probably more indebted to my colleagues in this branch of our profession for help and guidance in diagnosis, and for treatment of my patients, than to any other single branch, not excluding the pathologists and the surgeons. I only say this to emphasize my interest in radiology. But this close association and its practical results are not the subject of my lecture. Neither is it a consideration of all those individual diagnostic and therapeutic achievements of which the radiologist may well be proud, and upon which physicians become so dependent in the ordinary pursuit of their daily practice. I wish to deal with a larger aspect of the subject, and to mark down some of the ways in which, as the result of these almost breathless strides that your science has taken, our ideas about certain diseases have changed.

In the first place, let us consider just where radiology stands in relation to other parts of the scheme of medical study. In our conception of the nature and extent of disease processes clinical medicine is capable of contributing admirably clear pictures as the result of careful examination of the surface of the body. And by the exercise of the trained hand and ear we are able to elicit physical signs of lesions lying beneath the surface. But for ocular demonstration of any disease process which affects deeper structures we are dependent upon three methods: there is the experience of the *post-mortem* room, there is the brief and limited observation afforded by surgical operations, and there is the valuable help given by *x* rays. Of the enormous value of the *post-mortem* room in controlling our imaginations and in teaching us the gross and the minute structural changes produced by disease I need say nothing more. I am, however, tempted to utter an exhortation to radiologists amongst others to remember what a bed-rock of fact is provided by this fundamental institution in the science of medicine, and what a salutary control it exercises over the natural tendency of the human mind to dogmatize. In reference to operations may I, in passing, share the lament of Sir James Mackenzie that hitherto so little has been done by way of systematic study when the living abdomen is opened and when the thoracic or when the cranial contents are exposed to view—proceedings that are becoming more and more common now that the surgery of the chest and skull is receiving more careful attention? But in the *post-mortem* study of disease, the great element of *function* is missing; and observations during operations upon the living are necessarily very limited so long as the procedures are, as needs must, so rapid, and the surgeon, acting in the patient's best interest, guards so jealously the wound which constantly invites infection. Neither of these deterrents applies to the third process; the radiologist is able in many cases to study both structure and function, he has ample time for his observations, and he can submit these to such of his colleagues as are competent to offer suggestions and interpretations resulting from their own special experience of disease in other fields.

Against these obvious advantages we have to set the disadvantage that the radiologist's observations are much more difficult, and therefore his interpretations of what he sees are much more liable to error. He deals with shadows rather than with substances, and this fact alone places a serious limit, if not to the range of his methods, at least to the rate of his progress. Despite this and other obstacles, radiology is probably at the present time the branch of medical science which is most responsible for changing our views in regard to disease processes in a number of directions, confirming some important hypotheses, eliminating others, and suggesting new lines of thought. So far as time and your patience allow I will touch upon a few of these things.

## FOCAL SEPSIS.

One of the most helpful conceptions in modern times in connexion with the pathogenesis of disease is that known as *focal sepsis*. We may say with confidence that the doctrine of focal sepsis has passed out of the realm of mere hypothesis and has become, in many instances, an established fact. The various clinical manifestations which we group together under the generic term "fibrositis" form some of the most common expressions of focal sepsis. True it is, there is still a considerable divergence of opinion as to the relative degree to which the microbic and the metabolic factors operate in the production of this condition; but it is demonstrable again and again that in many instances of this morbid process there is close association with a septic focus, drainage of which leads to cure of the disease without any other form of treatment. Radiology has given great help in establishing the truth of this doctrine. In the diagnosis of sinus infection, for example, it has enabled us to visualize the morbid condition of an antrum or of some other accessory nasal cavity; in mastoid infection the same experience often obtains; whereas in connexion with dental sepsis it has become our chief standby for exact knowledge wherewith to establish the diagnosis. Bacteriological researches led us some fifteen years ago to the conception of chronic toxic processes set up by subinfection of certain tissues by streptococci of comparatively feeble virulence. We theorized about these processes, and were led to the idea that in some way or other these streptococci colonized in (amongst others) the periodontal tissues very frequently, and thus constituted a form of focal sepsis which gave rise to fibrositis as well as to several other pathological effects. Then came the revelations of dental radiography, and the progressively clearer and clearer views which we were given of the state of the periodontal membrane. At once our theory was confirmed: we had ocular demonstration of a chronic, painless, sclerosing inflammation, without pus formation, yet capable of causing all manner of remote disturbances, sometimes as trivial as housemaids' knee and sometimes as lethal as ulcerating endocarditis. The specific focal lesion caused by salivary streptococci was exposed, and we found ourselves justified in having sent out patients to their dentists with a statement of our doubts, only to receive too often the familiar assurance that "there was no pyorrhoea." Such assurance nowadays gives us no more comfort of mind than it gives the patient comfort of body, for we know that teeth may be firm and gums dry, yet *x*-ray examination may reveal a thickened membrane and apical abscesses—adequate causes for toxaemia and a chain of resultant troubles. I may perhaps be forgiven for quoting from a paper which I read before the Odontological Society in 1914, where I was dealing with this question:

"The pathological process going on at the root of the dead tooth, leading to sclerosis of the tissues hereabouts, is exactly similar to that which is taking place in the joint structures, the

muscular fasciae, and the sheaths of the nerve-trunks. There may be very little suppuration throughout all this pathological change accompanying the chronic streptococcal infection; quite often there is no suppuration at all. To the naked eye there is nothing to see that indicates infection, unless it be the dense fibrosis. All the same, a sterile platinum loop, applied to the adherent sac as the dental surgeon holds the tooth in his forceps, and bringing away a mere droplet of blood, as it seems, is capable of giving, when smeared over an agar slope, a copious and pure culture of streptococcus. This question of suppuration has been the bugbear of many practitioners for a long time past, and even now underlies many fallacies connected with our ideas of infective processes. 'No suppuration, no infection' is a rough and ready rule, than which no graver error was ever conceived. There are two conditions in which, as modern bacteriology has taught us, suppuration may be quite absent, though micro-organisms, ordinarily pyogenic, are saturating the tissues with their toxins, and are directly leading to serious diseases: (*a*) The first condition is one in which the infection is a fulminating one, the micro-organism unusually virulent, and the tissues are overpowered before their resistance can show itself. (*b*) The second condition is one in which the micro-organism is one of feeble virulence, of long-standing action, and the tissue response to the prolonged infection is constructive rather than destructive. It is this latter condition which is present in so many cases of dead teeth, the roots of which are infected by *Streptococcus salivarius*."

Even to-day this old notion that infection, and even gross infection, together with severe toxaemia, cannot exist without suppuration, has not died out. The confirmation of the fact given by radiography has been overwhelming, and the influence of such confirmation has been wide spreading.

I need only mention the chronically inflamed appendix and the chronically inflamed gall bladder as other instances of focal sepsis established frequently by radiography. In the case of the gall bladder I have little doubt that by improvement in technique we shall soon be able to establish the diagnosis of chronic sepsis in addition to mere concretions.

### RADIOLOGY OF THE HOLLOW VISCERA.

Let me turn now to a very different subject. The influence of radiological investigations upon our knowledge of the anatomical relations and upon the motor functions of the *hollow viscera*, both in health and in disease, has been epoch-making. Physiology owes no less than pathology to these investigations; indeed, it is scarcely an exaggeration to say that the whole of our present conception of the neuro-muscular mechanism of the alimentary canal is the result of *x*-ray revelations. Granted that a study of the shadows cast by the opaque meal give us one aspect only of this complex mechanism, it still remains that this is the only precise and consistent set of visible phenomena at present available to us in this connexion. And the study of these phenomena has advanced and clarified our ideas to an astonishing degree. When we remember the notions we were taught, and were ourselves accustomed to teach, concerning the physiology of the stomach movements, for example, and what we now *know* as the result of studying the *x*-ray screen, the recollection almost brings the blush to the cheek. Whether we really had any exact knowledge at all on the matter I cannot now remember: no doubt that redoubtable Canadian, Alexis St. Martin, with his exposed stomach and its zealous observer, had a lot to answer for; the unfortunate incident was probably given a much heavier load than it could be expected reasonably to carry. To-day we stand upon much surer ground. The "lie" of the stomach and transverse colon, the position of the caecum, the appendix, and the hepatic and splenic flexures are now matters of common knowledge. The variations, too, in the positions of these organs, variations which are not incompatible with good health, despite all the gloomy forebodings of the advocates of colo- and caeco-pexy—we are familiar with these, and they find us for the most part unconcerned, though the knowledge of them is apt to leave their owners much perturbed. We are passing through the stage of incrimination on the score of disease to that of tolerance on the score of variability in individuals, and we may yet arrive at the stage of indifference on the score of a changed conception of the standard of health—all as the result of greater familiarity with the facts as they steadily accumulate from large numbers of radiographic records. In other words, the same thing is happening with regard to our ideas about the hollow viscera as has happened with regard to our ideas about the kidneys. Even moderate degrees of nephroptosis were at one time regarded as signs of a morbid state, capable of explaining most of the functional disabilities met with in the neurasthenic, and not excluding, in the opinion of some, even grave forms of psychosis. The dropped organ was supported by pads, was "stitched up," was even removed. To-day none of these treatments is considered necessary; the most that we do is to advise some sort of general abdominal support. Enteroptosis, its significance and its treatment, would seem to be passing through the same phases. But just as a kidney may be fixed in an aberrant and in an awkward position, justifying surgical treatment, so, no doubt, a caecum may be tied down in the pelvis, be incapable of emptying itself and may justify a surgical procedure to restore its function. But this difference—between mere ptosis from lack of tone and support on the one hand, and mechanical handicap from fixation on the other hand—constitutes the very essence of the matter, and it is a difference which radiography, and that alone, is able to distinguish in any given case.

But it is not only in the matter of the mere "lie" of the hollow viscera, and the presence or absence of fixation, that radiography has given us such clear ideas; a good many points connected with the motor function of these organs have also been established. I do not propose to deal in detail with the series of events that is now recognized as constituting the normal diorama of the passage of the opaque meal through the alimentary canal, though this is probably the most illuminating discovery of all. But I wish to refer to a few points in which radiography is still giving great assistance to our ideas and enabling us to understand more clearly the nature of some of the problems presented to us by the patient. To put my conclusions first and discuss them briefly afterwards, I would say that *x*-ray investigations of the alimentary tract seem to me to indicate that although there is a general average of results which may conveniently be taken as representing normal functions, there are many variations within this general average to which it is very important not to attach too much pathological significance. (1) These variations are as between individual and individual and they are probably part of the personal equations of the particular subjects examined, as much as are their facial expression, their gait, and their speech. But our experience of the posture and movements of the hollow viscera is a new experience—it is little more than half a generation old—whereas our experience of face and gait and speech is very old. No wonder that we lack unanimity in our views as to what is normal and what is abnormal. There being no rigid standard of health in this particular respect, it is not to be wondered at that our interpretations of what we see differ so much. Up till the present I doubt if we can say much more of large numbers of opaque meal skiagrams than that they are all of them representations of the alimentary tract of genus Homo, and that they do not reveal any evidence of gross structural defects.

How can we, by means of radiology, get further along this particular line? I suggest that one hopeful way is by departing somewhat from the fixed routine at present employed. There is surely room for some play of the imagination and some experimentation with the method. It was a great advance when the radiologist began to supplement his stereotyped methods of examination by varying the posture of his patient; it was a still greater advance when he began to combine palpation of the abdomen with the use of the fluorescent screen. Such combined methods were, I believe, almost resented by certain clinicians, who thought their own sphere of activity was being thereby invaded; but such resentment, though inevitable, was justly disregarded. I am not one of those who regard the radiologist as a mechanic, or as a photographer, though I am aware that some radiologists aim at little else. There is no reason why the radiologist should not be a clinician in spirit, indeed there is every reason why he should be, for to divorce clinical medicine and radiology is to impoverish both. This leads me to say that I think a closer co-operation between the clinician and the radiologist, and more exchange of views, are desirable factors in the advance of knowledge of the diagnosis and treatment of those diseases which have points of interest to them both.

Such co-operation might easily result in new methods of combined radiographic and clinical investigation as well as in more consistent results from radio-active treatment.

I have said that I think the ideal radiologist should be a clinician in spirit, and I have inferred at the beginning of my remarks that he is a pathologist in spirit also. But I think it very important that he should know the limits of his method, or rather that he should not strain his method past its possibilities in his interpretation of results. If he does this he is no longer giving us the valuable help of his technique and of his powers of observation—he is theorizing. Let me illustrate by reading the conclusions of a report upon the opaque meal examination of a patient whom I saw a week ago. They read as follows:

"The elongation of the pelvic colon and the kink of the iliac colon constitute the primary abnormalities in the alimentary tract. There is pronounced catarrh shown by increased sacculation of the caecum, ascending and transverse colon, and by persistent narrowing from tonic spasm of the latter portions of the transverse colon and of the descending, iliac, and pelvic colon. The appendix is also catarrhal. The ileo-caecal valve is incompetent. The terminal coil of the ileum is hypertrophied. There is spasm at the ileo-caecal entrance. There is delay in the stomach, but no organic disease or mechanical abnormalities of the stomach or duodenum.

"The severe catarrh of the large intestine and the iliac stasis due to spasm at the ileo-caecal entrance lead to profound toxaemia."

Now I should be the last to put a limit to the radioscopic method of demonstrating anything, whether it be "catarrh" or "toxaemia," but I am not aware that, up to date, either of these processes is amenable to the opaque meal method. Though I say it with less assurance, I am doubtful if "hypertrophy" is any more demonstrable than "catarrh." No doubt the argument is sound enough if we add to the radioscopic evidence the collateral facts elicited by clinical and clinico-pathological methods. But not otherwise. If forbearance be not exercised in these things and the radiologist really "lets himself go" he is apt to bring his science into disrepute. I have received reports of a much more committal kind than the one I have just read. It is by no means uncommon to be told that a child has active and extensive pulmonary tuberculosis because the hilum shadows are conspicuous, and the glands obviously enlarged, after some febrile illness. I have even been rung up on the telephone, so intent was the radiographist to let me know the seriousness of such a situation. I was able to assure him that the boy was already convalescing rapidly at the seaside. I am, of course, alive to the fallacy in these remarks: that the child might be suffering from pulmonary tuberculosis after all. But experience must be the final guide in such cases, and experience cautions us very definitely not to make exact diagnoses in the absence of clinical data. Why need we? There is no necessary parallelism between change in structure and change in function, and the essence of disease is a functional rather than an anatomical change. Radioscopy itself has helped us greatly in this conception. How many instances we see in which there are quite extensive bony changes in the hip-joints and in the spine, but little or no pain or other disability. On the other hand, how severe may be the symptoms of hip-joint disease, without any demonstrable change seen in the radiograms. One patient may have a large collection of gall stones and be in excellent health; another may have no actual concretions and yet be the subject of severe gall-bladder dyspepsia. These examples might easily be multiplied.

To return to the question of the opaque meal and its help in establishing variations in the position and in the functions of the hollow viscera. (2) Not only are these variations seen in skiagrams resulting from the examination of different healthy individuals, there are also variations, of no great moment considered pathologically, and yet of great physiological significance, in the same individual at different times and under different conditions. I have proof of this fact, and no doubt not a few others present have proof also. But as "repeat" investigations are not often undertaken the evidence is not so abundant as in the case of different individuals. Certain fortuitous observations, however, are pertinent. A radiological colleague of mine recently told me that he was on one occasion screening a nervous patient just after the opaque meal had been swallowed. It was before the time of the fixed screen. In moving this upwards to get a view of the cardiac orifice, the top inadvertently struck the patient under the chin. It was immediately noticed that the stomach, which had previously been observed to lie in a good position, and to be actively motile, dropped suddenly a distance of several inches, and at the same time all active peristalsis ceased. This excellent demonstration of the sensitive response made by this organ to a sudden shock points a moral to the story that I am, by comparison, labouring in the telling. It is sometimes inevitable that, though no such physically painful stimulus as this takes place, the novel and somewhat alarming noises which or during a radioscopic examination must have a somewhat similar effect. There is little doubt that when a patient says he has a sinking sensation in the abdomen the sensation is accompanied by a relative and temporary degree of gastroptosis; and I think it quite likely that, if we were able to screen a person during the play of various emotions, we should find that when his "heart was lifted up," and when his "heart sank within him," it is in reality not his heart but his stomach that changes its position in this manner, as the result of increased and of decreased tone respectively. I do not know if the cinematograph method has ever been applied to the transit of the opaque meal, but it is not at all unlikely that a series of pictures taken in this way would reveal many facts at present only guessed at, especially if the observations were made to cover some of the emotional states just referred to. If the stomach is so sensitive to emotions, to pain, and to reflex action through the special senses, it is not likely to be less sensitive to general fatigue. I think this may perhaps explain some of the discrepancies between the clinical examination of the stomach and the radiographic results. It was formerly not at all an uncommon experience of mine to conclude, as the result of my examination of a patient in the afternoon, that he had a dilated and atonic stomach, and to feel somewhat mystified when my radiological colleague demonstrated to me next morning that the organ was of a natural size and possessed of good motility. I now feel confident that it is the difference between afternoon and morning that accounts for the apparent disparity of the results, though I think that there are other factors which enter into the causation of the "splashing stomach" that is so common on the couch of our consulting rooms, and yet which so often finds no equivalent expression in the observations of the radiologist.

There are two or three further points in connexion with the important subject of enteroptosis where radiology has been illuminating in two senses of the word. One of these is the difference in level of the stomach, and especially of the colon, with posture. Radioscopic investigations certainly confirm the advice which we usually give patients suffering from this trouble to interrupt the erect posture of the greater part of the day by lying for a certain time in the semi-Trendelenburg position, for the difference of levels of the viscera in the two positions can be shown to be well worth the while. Again, examination during the wearing of a properly fitting support, such as special corsets which take their purchase from the hips and from the spine, proves that, in some cases at all events, the support really does assist in keeping the organs in better position. Lastly, it can be demonstrated that the effect of a walk which is not too fatiguing is to raise, and not to lower, the levels of the hollow viscera. For these demonstrations I am indebted to my friend Dr. Dudley Stone, whose skiagrams I hope to show you at the close of these remarks.

Before leaving this matter of enteroptosis I wish to refer to one other point, partly because of its pathological interest and partly as a warning. It is common knowledge that we are often able, by a carefully devised programme of treatment properly carried out, to improve the health of the subjects of this condition very considerably, even to the extent of hearing them declare that they are "cured" of their symptoms. If now we examine them again radioscopically by the opaque meal method we find, in quite a number of cases, that the "lie" of the stomach and colon is practically unchanged. The moral is obvious: to the patients whose intelligence is able to hear the news we

explain that it was not the mere ptosis of their organs that caused their discomforts and their general inefficiency, but the associated nervous asthenia, and even more (as I myself think probable) the congestive state of these same organs. To the majority of such patients, however, it is wiser to avoid the repetition of the examination altogether—not a very difficult situation to negotiate in actual practice in view of the present cost of a complete opaque meal investigation. The experience that I have just recorded serves well to confirm the principle that many diseased conditions are complexes made up of anatomical defects, together with nervous, vascular, metabolic, and infective associations. Radiology shows us one part of the picture, and a very important part—still, only one part.

In the history of its progress radiology must, of necessity, have first concerned itself with gross structural points, both normal and abnormal. It was essential to get certain rough criteria established. The method has now passed this stage in most regions of the body, though not in all. It is now contributing help of a more important, though more subtle, kind: it is helping us to study function, again both normal and abnormal. It is helping us to realize more vividly the fact that for a long time the patient does not suffer from diseases but from a tendency to disease; that later, when disease is established, the dis-function is not a fixed state, but an ebb and flow. I should like to make it clear that to me this is the kind of help that seems of vital importance. I doubt very much if those radiologists who are striving after "standards" may not be missing some more important things—I do not speak of physical standards, but of health standards. One such radiologist friend of mine with whom I was discussing a case of mutual interest said recently, "I wish we had a standard measurement for the breadth of the mediastinal shadow." Comment is unnecessary, but that is the outlook which I regard as likely to stultify some of the great possibilities of his science in the near future.

### Radiology in Diseases of the Lymphatic Glands.

Upon our knowledge of diseases of the lymphatic glands radiology has thrown a flood of light. The discovery of enlarged nodes by *x*-ray methods was for a time such a revelation that it not only gave confirmation to the view that tuberculosis of those glands was a very common disease, it led many radiologists to give quite unwarranted and pessimistic opinions concerning the patients examined by them—an error of judgement that even to-day is by no means rare. If I may add that it is also by no means rare for patients to be given possession of their own or their children's radiograms, it is readily seen how easy it is to construct, quite unwittingly, situations full of apprehension and alarm, but which can be avoided by a little care and tact on the part of the radiologist. With improvement in technique, the frequency with which shadows are demonstrated in the regions where glands are known to enlarge—such as the roots of the lungs—becomes greater year by year. It is no longer necessary that a node shall be calcified, or even caseous, to throw a shadow by modern radiological methods. The standards of health are therefore, in this respect, changing. On the one hand we realize more clearly than we formerly did that there is an ebb and flow in the size of lymph glands in the thorax as there is in superficial parts of the body that are open to palpation; to some extent, therefore, the significance of demonstrating enlarged glands in the former situation is not so serious as was once supposed. On the other hand radiology has opened our eyes to the fact that, in certain diseases of the lymph glands where we thought the lesions were confined to the superficial nodes, in many cases the intrathoracic nodes are enlarged also. An important example of this is lymphadenoma, where such a discovery at one and the same time increases the seriousness of our prognosis yet enables us to treat the disease much more promptly and effectively. In the not uncommon cases of this disease in which periodic pyrexia occurs, we were often quite in the dark as to where the specifically active process which led to the fever was going on. We watched the glands in the neck, axillae, groins—nothing occurred. We suspected the visceral lymphoid tissue, and we therefore kept the spleen and liver under close observation—still we had no clue. A good *x*-ray picture solved the mystery by its revelation of the rise and fall in the breadth of the shadows in the hila of the lungs. No doubt in some of these cases we shall in the future, with improved methods, get similar demonstrations in regard to the abdominal lymph nodes in lymphadenoma. In the case of carcinoma of the breast a similar demonstration of the fact that the zone of lymphatic infiltration is more extensive than would otherwise be supposed is often given by radiological examination. And the significance of this finding is much the same as was seen to be the case in lymphadenoma: on the one hand our conception of carcinoma mammae as a disease has changed in that we now know it to be often a more extensive affair than was formerly supposed, and, on the other hand, we are able to set against this serious consideration knowledge that leads to much earlier and therefore more effective treatment.

It is not only in relation to lymph nodes that our conception of carcinoma has changed as the result of radiological findings: the same remarks are applicable to the bones. We now know that osseous metastases are much more common than was thought to be the case before the era of radiology. The clinical picture presented by a woman who has undergone excision of the breast for cancer two, four, six, or even ten years ago, and who now complains of severe pain in the back, hips, or legs, due to cancerous infiltration of the bodies of the vertebrae, or of the pelvic bones, is all too familiar. Such cases were usually thought to be severe examples of fibrositis until one or more of the lesions led to local prominence or to spontaneous fracture. It is possible that such cases are more common to-day than formerly; it is even possible that they are relatively more common in patients who have had radical operations done for the primary growth; but it is certain that as the result of *x*-ray investigation we are able to diagnose them much earlier, and it is highly probable that many are brought to light to-day which would never be discovered at all. Further, it is not a very uncommon experience to find these tell-tale lesions overlooked in a good radiogram, even by the radiologist; and I think the reason is, either that he is not warned of the possibility of neoplastic disease, or because his attention is distracted from the infiltrations by some oesto-arthritic changes at the periphery of the vertebrae. I have recently dealt more fully with this subject of carcinomatosis in the Purvis oration. I pointed out there that in not a few of the cases the appearances may be equivocal. For there is a condition now and then met with in carcinoma in which good radiograms reveal a state of diffuse rarefaction of several of the bones, the nature of which is difficult to determine, and which is almost certainly different from the more localized deposits that I have just referred to. I regard this change as part of the general toxic or nutritional disturbance that occurs in carcinoma, and which leads eventually to the so-called malignant cachexia. It is sometimes asserted that malignant cachexia is due to secondary microbic infection of the growth; but this is probably only so in part; these bony changes go to show that there is something specific in the carcinomatous cachexia, for we have no knowledge of them in chronic pyogenic infections. I was interested to hear from my colleague, Dr. Gilbert Scott, that he had met with this same appearance, and that he felt sure it was not due to actual cancerous infiltration, however widespread this undoubtedly is at times. I purpose showing lantern slides, taken from skiagrams kindly lent to me by Dr. Gilbert Scott and by Dr. Robert Knox, which illustrates this condition. I find that this peculiar form of mollities has been noticed by one or two observers before, particularly by Roger Williams, but I have not come across any radiographic examples of it.

### Radiotherapy.

Thus far I have dealt only with some of the ways in which radiology has influenced our ideas of disease by revealing to us changes in structure and function that we previously knew nothing about or merely guessed at. I turn now to a few examples of modifications in our views of disease resulting from the experience of radiotherapy. And it is a natural transition from the radiographic aspects of carcinoma to which I have just referred to the radiotherapeutics of malignant disease. The surgical treatment

of malignant tumours has advanced very little during the past generation, and such advance as it has made is to be attributed almost entirely to advance in the means of diagnosis whereby operative procedures offer better hope of radical cure. The practice of aseptic methods once established, and the importance of the anaesthetist's contribution to the success of the operation once fully recognized, the limits of the surgeon's possibilities in this direction seemed to be reached. Handley's important work upon the lymphatic spread of cancer of the breast is now just twenty years old, Stiles's and Halstead's classical papers advocating widespread removal of infected tissues are ten years older. The work of these men has not been materially altered up till to-day. Perhaps the only important advance in the operative treatment of carcinoma during the past two decades is the abdomino-perineal operation for cancer of the rectum, for the present improved technique of which credit is to be given in this country to W. E. Miles. If we turn to the medical side of the question, and ask what advances the physician has made towards the treatment of malignant disease, we are met almost with silence. The evidence that the injection of the heavy metals materially benefits the subject of malignant disease is, I think, very slight, although I consider that they have a definite value when used in conjunction with radio-active treatment. The fact that various sorts of serums and antigens, even including Coley's fluid, have completely fallen into disuse, goes to show that in this field nothing is being accomplished. Certain ancillary helps, it is true, the physician can give, both to the surgeon and to the radiologist, but I know of nothing he does, any more than the surgeon, in the direction of therapeutics which affects our conception of the neoplastic process.

If we now turn to the sphere of the radiologist, we find an entirely different state of things. I am not to-day concerned with the results, still less with the methods, of treatment of malignant growths by *x* ray or by radium. But the bearing of such treatment upon our ideas of the course and even the pathogenesis of such growths is very close. It is fairly safe to predict that the many observations now in actual progress will very shortly yield important facts the knowledge of which will not only help to crystallize our ideas upon some of the causative factors, but will also enable us to control our remedies more hopefully. One great change in our ideas about cancer, or so it seems to me, as the result of radio-active treatment, is the abolition of the notion that there is anything necessarily and inevitably progressive about the disease. Once we have seen—as which of us here has not?—a patient's general condition of health restored, and his growth greatly reduced in size, by radio-active treatment, we can never again look upon cancer in quite the same light. It is true that, with our present limited knowledge, working in the dark to a large extent as we are, such restoration to health, and such resorption of the tumour, are but of temporary duration. But my point is this—that in such cases we have a demonstration of the fact that *cancer is controllable*, using a word that I regard as more applicable to diseases in general and more scientific in its connotation than the more popular word "cure." If we consider the matter for a moment, do we *cure* tuberculosis? We do not, but we are perhaps getting the disease slowly under control. We have certainly added nothing specific to our means of "cure" in this disease; we are even using specific methods less and less. Syphilis is more definitely controlled to-day than twenty years ago, but there are many cases that still resist curative treatment; syphilis of the central nervous system we are still almost powerless to deal with by any of our present methods. Ulcerating endocarditis we neither cure nor even control, and of certain forms of rheumatic infection of the heart unfortunately the same thing may be said.

The senior surgeon of a large London hospital recently said publicly that he regarded the exploitation of radiotherapeutic methods as a menace to the effective treatment of cancer, asserting that he considered such efforts prevented patients from receiving the early benefits of radical surgical measures. Such an extraordinary indictment calls for some comment. If radiotherapy really did this I should agree with him. But of course it does not. No reputable radiologist dreams of denying a patient with an operable malignant tumour the advantages of surgery; in every case the surgeon has the "first call"; and a firm conviction that in the treatment of malignant disease to remove the diseased organ cannot be more than a method *faute de mieux* does not, in the present stage of our knowledge, cause us to swerve for an instant from this invariable rule of practice. Unfortunately there are all too many cases in which, even at the earliest moment of the diagnosis, modern surgical technique is unavailable; the growth is so situated anatomically that it cannot be reached or is already disseminate. Appropriate material for the radiotherapist is therefore not lacking, though he is, by virtue of the rule already mentioned, denied the very sort of material with which he could probably do the best work. But even with this handicap it is possible to mark a steady change in the course of cancerous diseases as the result of the radiologist's efforts, and the outlook for sufferers from the dreaded scourge was never so hopeful as now. Many cancer patients live longer to-day, and live less painfully, both in body and mind, than ever before, and this is very largely on account of radio-active therapeutics.

Do these facts throw any clear light upon the etiology of cancer? Perhaps not. But the more successful application of radiotherapy to lymphadenoma is to me significant in this connexion. There are many similarities between these two diseases. If, as I think is not unlikely, the lymphadenomas are proved to be caused by a group of protozoal parasites, then the increasing success that we find attending the combined treatment of these affections by arsenic and *x* rays does seem to suggest that we should be premature in considering that cancer is not an infective disease as has been recently asserted, and asserted semi-officially, by some workers. But this is too large a question for the purpose of this lecture. Like many other questions connected with cancer, the answer can only come from concentrated labour and constructive thought. I am optimistic about combined methods of research—radiologist, clinician, and pathologist working in team fashion. Research combined with treatment is not popular with scientific advisory committees, but we must do our best to make it popular, and no doubt the more contributions it makes to knowledge, the less unpopular will it become. "Why," said a colleague to me recently, "why do they call it research when *they* put radium into a mouse, but not when *we* put it into a man?" No answer seems possible unless it be that the radiologist, the clinician, and the histologist are not considered to be capable of observation or experiment. Let us demonstrate that this is not true, and let those who disburse public funds help us to explore this fertile ground of research combined with treatment. I have often remarked that every piece of treatment properly devised and carried out *is* a piece of research. I am no prophet, but I hazard a prediction that the effective control of cancer will come by other means than by a direct attack upon the essential *materies morbi*, even if it does not come before we know what that *materies morbi* is. And I think that research combined with radiotherapy will have been a conspicuous factor in bringing the control about.

I must not stay to deal with other diseases in which our conceptions have been influenced by the experience of radiotherapy. In the leukaemias, in exophthalmic goitre, in various skin diseases, and to a less degree in several other fields, our ideas about pathology have been modified. I think the modifications would have been even more striking if the work had been more thoroughly controlled by combined clinical and histological methods. But there are, as I have said, hopeful signs that such control will be sought and will be given in the future.

## CONCLUSION.

I am all too well aware that in this address I have brought coals to Newcastle. For a physician to talk to radiologists about a subject so special as theirs is must lead of necessity to not a few bizarre expressions and demonstrations of his own ignorance. But the point of view of one who is an outsider in all matters of radiological technique, and yet an insider in all matters of pathological interest, may not be without its suggestiveness to your minds. And surely it is pathology (I use the word in its

old and truest sense) that links together all our diverse interests. We must never lose sight of the essential *unity* of pathological processes. Though clinical medicine sees one aspect of a disease, and radiology another, and morbid anatomy a third, and parasitology a fourth, the disease is one and the same, and our best conception of it is obtained, not by undue insistence upon any one of these aspects, but by a proportionate mingling of the pictures presented by all. He who achieves the most complete conception of a disease in his mind is the most likely to envisage the appropriate treatment and get the best result. None of us can afford to neglect the facts elicited by the methods of others; indeed, our own methods will yield us more facts, and a clearer vision, in exact proportion as we allow them to be guided and controlled by the methods of others. It is of the utmost importance that we keep our minds alert and free from stereotyped ideas, yet bound always, fettered even, by the principles of science and reason, with a healthy scepticism withal—that saving grace so essential to the scientific mind. Let us remember that our present notions of diseases, even when we think them very complete, are probably extremely crude. We have already ample experience that this is so. Not only are they crude in respect of the extent and the complexity of the disease process, as instanced earlier in this address, but in respect of the course diseases run and their response to our efforts at treatment. The problems of pathology become more elusive and yet more fascinating the closer we study them. It is a glorious contribution to such study that you are making to-day by means of radiology, both in its diagnostic and in its therapeutic values. The memory of him in whose name we meet together to-day is, I feel sure, being well served by you who follow him. I wish to congratulate you upon the fine work with which you are supplementing his and other pioneer achievements, and I shall have justified myself if anything I have said serves to stimulate you to further efforts and yet greater results.

## Hunterian Lecture

ON

# CANCER OF THE CERVIX.

(*With Special Plate.*)

DELIVERED BEFORE THE ROYAL COLLEGE OF SURGEONS, JANUARY 25TH, 1924,

BY

SIDNEY FORSDIKE, B.S., F.R.C.S., M.D.

(*Abridged.*)

### ETIOLOGY OF CANCER.

MODERN methods of experimental research have resulted in the production of cancer in animals at will. This result, together with Drew's observations upon the culture of tissues and tumours *in vitro*, are notable steps in the solution of the secret of cancer. Already theories which have held sway for generations have been demolished. The vague conception of tissue tension is no longer tenable, and the behaviour of malignant and benign cells during growth *in vitro* shows conclusively that Hansemann's theory of anaplasia is unfounded, whereas it confirms the view that tumour formation ensues upon chronic irritation. The production of tar cancer shows that there is a variable latent period between the application of the irritant and the appearance of the new growth, from which some interesting conclusions follow. A close study of cancer in human beings frequently fails to disclose recent evidence of tissue irritation; nevertheless, the irritant may have produced cell changes which are not histologically recognizable at the time, but long after the irritant has ceased to act the tissues exhibit malignant change. This is borne out by Leitch's experiments with tar cancer. He noted that, even though he stopped the application of tar before there was any sign of malignant change, warts appeared in due course and malignant evolution took place.

Furthermore, it has been shown that tumours which are apparently benign may develop into malignant growths, and that injury, which of itself is not capable of producing cancer, will greatly accelerate the development of cancer after the application of a suitable irritant. Finally, there is the important fact established by Murray, that mice which have developed tar cancer will not develop a second tumour despite continued irritation, which observation offers an explanation of the rarity of multiple carcinomata in man. It shows that the mouse acquires immunity to the growth of further tumours, which is also borne out by the observation that certain inoculated tumours, after a period of growth, came to a standstill and were finally absorbed. Attempts to reinoculate the same mice with the same tumour completely failed, and they showed greater resistance than normal mice to other tumours. Bashford and Murray have shown that this resistance is of the nature of an active immunity.

*Proemial Conditions.*

I agree with Lenthal Cheatle that this description is more exact than precancerous or precursory. Erosions, fissures, lacerations, and chronic cervicitis are described as forerunners of cancer of the cervix, but as one or more of these lesions are invariably present in parous women, and as 90 per cent. of this disease occurs in that group, the evidence is not too convincing. Since, however, experimental cancer is shown to be dependent upon irritation, it is possible that any of these lesions is an indication that the irritant is present, and where it happens upon favourable ground malignant growth ensues. I investigated a large number of uteri of some of the more prolific domesticated animals—the cow, sow, bitch, and cat—with the object of ascertaining whether any of these lesions could be found in them. The cervices of the cow and sow are formed of a rosette of protuberant cervical mucosa, and it was not possible to detect by naked-eye examination whether minor tears and lacerations were present or not; but in none of the organs examined was there any gross lesion, and on microscopic examination there was no evidence of cervicitis. In the cat and bitch the cervix has a less complicated structure and is therefore more satisfactory for examination. No evidence of laceration or chronic inflammatory lesion was found. Professor Wooldridge informs me that carcinoma of the uterus is exceedingly rare in any animal; nevertheless, it is of interest to note the rarity of both types of lesion which are so frequently associated in cancer of the cervix in women.

*Erosions.*—There is suggestive evidence that the papillary erosion stands in some sort of relation to cancer; four cases of interest have been under my observation.

One had been an in-patient for chronic cervicitis with a papillary erosion. She came under my observation nine months later with an extensive carcinoma of the cervix.

Another was treated similarly and a piece removed for section, which showed no malignant change; fifteen months later she came under observation with an inoperable growth of the cervix.

A third was regarded as an erosion, but as it bled a little more than usual she was entered for admission, with a view to exploration. She escaped observation for five months, and then returned with an inoperable cancer.

The fourth had been treated as a cervicitis, and seven months later came under my care with advanced cancer.

There is another type of lesion of which I have met three cases in all, and for want of a better description it may be called the "bleeding cervix."

*Bleeding Cervix.*—The whole cervix is soft and spongy, dark red in colour, bleeds persistently when swabbed, and a probe sinks into its substance. The haemorrhage resembles that which takes place from the surface of a granulating wound—numerous minute drops of blood ooze out, run together and form a stream. It differs from the haemorrhage of the papillary erosion, for that ceases at once with a little pressure, but this persists and may require a gauze plug to enable the patient to get home.

In one of these cases the bleeding persisted daily for a week, and I finally amputated the cervix. This patient died twelve months later from carcinoma of the stump of the cervix.

A second became malignant, and I removed the uterus.

The third is now under observation, and as the microscopic examination did not justify the radical operation I treated her with radium. The microscopic appearances are those of angioma. The deep part of the section shows evidence of cervicitis; the epithelium is squamous and shows no evidence of proliferation, the striking feature being the number of blood vessels in the section.

There is little doubt that, apart from local lesions, anything which tends to lower the resistance of a patient is a contributory cause to the development of cancer. It is a curious fact that cancer of the womb is very largely a disease of the hospital class of patient, who have large families and are more prone to suffer from neglected infections than the well-to-do class. In addition to which, environment, malnutrition, and alcoholism play no small part in depriving the organism of the natural power of resistance.

In 200 cases of cancer of the cervix there was no evidence of hereditary influence. There were seven cases between 20 and 30 years of age, forty cases over 60, the majority occurring between 45 and 55. The incidence in nulliparous women was 12 per cent. Twenty-seven of these cases had undergone some form of operation: subtotal hysterectomy 5, amputation of cervix 1, cervical polypi 4, dilatation and curettage 5, ovariotomy 6, miscellaneous operations 6. Ten of the cases were associated with some degree of prolapse, for which a pessary had been worn for some time, and three were associated with fibroids.

### SYMPTOMS.

The signs and symptoms of cancer of the cervix are entirely dependent upon the conditions of the growth and the extent to which it is protected from infection. Carcinoma begins as a proliferation of tissue cells with the formation of a microscopic tumour. Ulceration of that tumour only takes place when the supply of nourishment fails to keep pace with the new growth, and it is with the advent of ulceration that symptoms first appear. These symptoms may be so slight as to remain unnoticed or appear so trivial as to be ignored until the ulcer becomes infected. The importance of infection of a malignant growth cannot be exaggerated, for two results ensue—increased rapidity of growth, and increased rapidity of necrosis with the consequent foul discharge and haemorrhage. In this connexion it is well to recall the experiments of Bashford and Murray, who found that mice could support enormous tumours without showing any disturbance, even though metastases had formed; but with the appearance of ulceration and infection, emaciation and death soon followed. The cervix is situated at the upper end of the vagina, and so long as that canal is anatomically intact and does not function infection may be long delayed. This is well borne out in elderly women who are past sexual life, and in whom the vagina is a narrow atrophic cavity. There were forty such cases in this series, all over 60 years of age, four of which were submitted to operation, the remainder being inoperable. The analysis of the duration of symptoms in these cases is as follows:

| | | | |
|---|---|---|---|
| 4 weeks ... ... ... | 4 | 9 weeks ... ... ... | 4 |
| 5 ,, ... ... ... | 2 | 10 ,, ... ... ... | 3 |
| 6 ,, ... ... ... | 2 | 12 ,, ... ... ... | 4 |
| 7 ,, ... ... ... | 4 | 16 ,, ... ... ... | 3 |
| 8 ,, ... ... ... | 3 | | |

It is clear from this table that any attempt to gauge the age of the lesion from the initial appearance of symptoms is liable to a large margin of error, and any deduction based upon such a foundation is fallacious. Friability is regarded as almost pathognomonic of cancer, and undoubtedly it is in an extensive growth, but in a recently formed ulcer the degree of friability is small and as a sign of early cancer its value is greatly exaggerated.

### *Histological Type in Relation to Malignancy.*

Krompecher first pointed out that many tumours which grow in the skin and are derived from it are different in structure and biologically behave in a different way from squamous epithelioma. He regarded them as being derived from the basal layers of the skin, for which reason they show no tendency to keratinization or pearl formation. These tumours, which include rodent ulcer, are relatively benign and are described as basal-cell cancer. Continental observers lay stress upon this division and recognize (*a*) basal-celled, (*b*) spinous (squamous epithelioma), (*c*) an intermediate group having some characters of both types. They hold that the basal-cell type is relatively benign and highly radio-sensitive, whereas the spinous-cell type is very malignant and relatively radio-resistant.

Martzloff (Johns Hopkins Hospital) investigated the histology of 257 cancers of the cervix in an attempt to correlate the type of malignant cell with the subsequent clinical history of the patient. He classified the growths as (1) spinal-cell type (squamous epithelioma), (2) transitional type, (3) fat spindle type, which corresponds to the basal-cell cancer. His observations suggest that the fat spindle type was the most malignant despite its correspondence with the relatively benign basal-cell cancer of the skin. The transitional type was next in order of malignancy, and the spinal-cell type was relatively least malignant. He further noted that inoperability was most frequently associated with the transitional and fat spindle types.

Here are two directly opposed views on what appears to be a definite issue, the difference being due to the difficulty of classifying these tumours in the way which the opponents have done. My experience shows that these divisions are highly artificial, for sections taken from different parts of the same tumour might place the growth in Group 1, 2, or 3; and of twelve sections from different tumours, two would belong to Group 1, two to Group 3, and of the other eight a difference of opinion would exist amongst competent histologists as to whether they belonged to the one or the other, or whether they should form a third group. The division of these tumours into twelve subgroups based upon the numerical predominance of one type of cell appears to me to offer little profit for much labour, and no conclusions of value can be deduced from it. Looking through the sections of my cases in the light of subsequent clinical history, I find myself quite unable to correlate the type of malignant cell with the degree of malignancy. With the exception that a very cellular growth is an acute lesion, while a tumour which shows fibrous reaction is more chronic, little information as to the future is to be gained from the type of cell. We are accustomed to the uncertainty attending tumours which present almost identical features under the microscope—how one tumour grows rapidly and kills the patient quickly, whereas another may take years to compass the same end. The laboratory propagation of mouse tumours has shown that histological structure is a poor gauge of biological character, and experiment has closed the interval between normal tissue and undifferentiated tumour tissue, by the production of a series of tumours with increasing differentiation.

### DIAGNOSIS.

Early diagnosis depends upon digital examination and visual inspection through a speculum at the onset of symptoms and the removal of a piece of tissue for section. This operation is best done under anaesthesia, for the vagina and cervix can be properly cleansed, and the wound closed with a catgut suture. The tissue removed must include a part of the growth and some of the underlying healthy tissue. Asepsis is vital, for once a growth becomes infected it is impossible to sterilize it. Attention has already been drawn to the association of papillary erosions with cancer, and the imperative necessity of microscopic diagnosis. This applies to polypi, and to ulcers which do not heal rapidly under treatment; cases of syphilitic and tuberculous lesions are recorded as having been excised as cancerous growths.

### *Is the Growth Operable?*

In answering this question we must bear in mind that the real question is: "Can the growth be completely removed with a margin of healthy tissue?" In estimating the clinical signs we must allow for the microscopical tumour being some distance in advance of the clinical tumour, and that in 25 per cent. of cases which are clinically limited to the cervix malignant cells are present in the parametrium.

Induration of the surrounding tissue is not essentially malignant, but may be an inflammatory oedema associated with an ulcerated growth tending to disappear with appropriate treatment.

Fixation of the uterus is the first point to decide, which is best done by the bimanual examination. Limitation of movement may be due to an old inflammatory lesion or to the ramification of the growth, and it is often impossible

to decide between them. When due to growth complete removal is impossible, and when due to inflammatory lesion the difficulties attending the radical operation are greatly increased, and the operative mortality proportionally higher. The utero-sacral ligaments are best examined through the rectum, for the finger reaches a higher level, and the side walls of the pelvis can be explored at the same time. When the anterior lip of the cervix is involved cystoscopic examination of the bladder is imperative, and the ureters should be catheterized if necessary, for in comparatively early cases the base of the bladder is frequently infiltrated, and may show an elevation behind the trigone or an asymmetrical prominence of the trigone itself, on the summit of which is placed the ureteral orifice.

The appearance of a diffuse oedema, or more frequently a bullous oedema, due to infiltration of the veins and lymphatics of the base, is not uncommonly present. The oedema may be limited to the ureteral orifice, which presents a gaping mouth—an appearance which suggests that the ureter is compressed by growth. The left ureter is much more frequently involved than the right, which I believe is accounted for by Brasch's description of the relations of the ureter to the cervix and vagina. The majority of abandoned operations are due to infiltration of the bladder, which is the type of case where an antecedent cystoscopy would have obviated the operation. With the diagnosis of cancer of the cervix any of these appearances contraindicate the radical operation, for involvement of the base of the bladder and ureter is an absolute bar, in my opinion, to any attempt at removal of the tumour. For although resection of these organs is commonly successful in vesical tumours, cancer of the cervix so extensive as to involve them is too extensive to eradicate. Involvement of the rectum is rare, except in the late stages of the disease, and rectal symptoms are more often due to pressure than to infiltration by growth.

### TREATMENT.

The operative treatment of cancer of the cervix has undergone great change in the last twenty-five years—local excision of the disease by knife or cautery, supravaginal amputation of the cervix, vaginal hysterectomy, and, last of all, the radical abdominal operation. The limits of this last operation vary with the individual surgeon, from panhysterectomy with excision of as much parametrial and vaginal tissue as possible, to resection of bladder, ureters, bowel, and more or less of the pelvic fascia and glands. The mortality in the more extensive operations is as high as 70 per cent., and probably is rarely below 30 per cent.; the average for all cases is 20 per cent., and for early cases 6 per cent. The radical operation has now been practised widely for twenty years, and for early cases it has general support, but there is an increasing number of surgeons who question the wisdom of applying this operation to cancer which has clinically extended into the pericervical tissues, for the results are deplorable, and of those who survive the operation less than 10 per cent. are alive a year later (Martzloff). Further, it is disputed whether the radical abdominal operation shows any great improvement in results over the vaginal operation.

The Schauta Clinic treat all operable cases of cancer of the cervix by vaginal hysterectomy, and claim that their operability rate and freedom from recurrence over five years is equal to that of the Wertheim operation, while the mortality is only 20 to 25 per cent. of the latter. It would seem, therefore, that the time has come to estimate the legitimate scope of the abdominal operation, and numerous surgeons—notably Kelly and Burnham in America, Bumm, Döderlein, Pozzi, Flatau, and Recasens in Europe—have assessed its value by abandoning the radical operation for all cases where the growth exceeds the limits of the cervix clinically. They have reason for this attitude, inasmuch as the high mortality and pitiable end-results occur in the extensive growths, whereas the mortality and results of early cases are comparable to the most favourable of cancer operations. At the outset cancer is a local disease, and in a majority of early cases the growth can be completely removed surgically. I think the reverse is equally true—that once the growth is recognized clinically to have involved the pericervical tissues it is rarely or never completely removed, and few patients remain free for any length of time. If the operative results are to improve, our aim must be to get cases at an earlier stage of the disease rather than to strain operative technique to breaking point in an endeavour to deal with advanced cases.

In the discussion of treatment it is necessary to have some clinical division, and the following method seems convenient.

*Early Cases.*—Cases where the growth is limited to the cervix; in a minority of these only a part of the cervix is involved, and after the radical operation a large proportion of these should remain cured. In a majority of early cases the cervix is extensively infiltrated, yet no extension to the surrounding tissues can be made out, and the uterus is free. These cases are operable, but it is well to remember that in 25 per cent. of them cancer cells can be shown in the parametrial tissue removed, and with more efficient methods they would probably be found in a higher percentage of cases. This class of growth contributes a number of recurrences, but the operative mortality from these two divisions should not be more than 6 to 7 per cent.

*Borderline Group.*—Cases where one or both broad ligaments are infiltrated, and there is some fixation of the uterus; the growth may involve the vaginal wall or the patient may have a persistent frequency of micturition.

*Advanced Cases.*—These all surgeons regard as inoperable, with an extensive tumour fixing the uterus, involving the pelvic floor, base of the bladder, and maybe with recognizable secondary deposits.

The *early groups* are universally accepted as being proper operative risks, and if surgery were limited to them the operative mortality would be as low as 6 to 7 per cent. and a curability rate of 70 to 75 per cent. of operated cases would probably be obtained.

The *borderline group* forms the battle-ground where issue is joined by the advocates of the radical operation and the advocates of radiation. The term "borderline" denotes doubt in the surgeon's mind whether he can remove the growth entirely, so offering the patient some chance of cure. The problem is not whether the growth can be removed as a surgical feat, but whether it can be removed at a reasonable risk and with a reasonable chance of cure. Two schools of surgeons answer this question in different ways: One takes up the position that every case of cancer of the cervix in which there appears any chance, however small, of removing the growth, should be submitted to operation. This policy leads to a high operative mortality, a number of abandoned operations, a number of cases of incomplete removal of the growth, and a few cases which remain well over a variable period of time. Martzloff found that less than 10 per cent. survived for a year after operation, and that the mortality reached 70 per cent. in one year and was never less than 25 per cent.—a prohibitive rate from which that clinic recoiled. The other school has answered the question by placing the borderline case in the inoperable class and treating it by radiation.

I have notes of 50 borderline cases treated by the radical operation in which the parametria were infiltrated by growth, many of which came under my observation for treatment of recurrence of the growth. The most striking feature of this study is the large number of early recurrences and the consequent relief was so transient as to be negligible.

Of the 50 cases, 10 are living and 40 dead.

Of the 10 alive, 6 remain well over periods of 5½, 4½, 4, 4, 3½, and 3 years; 2 remain well between one and two years; 2 are alive with recurrence under twelve months.

Of the 40 dead, 8 recurred in two to six months; 14 recurred between six and eleven months; 7 recurred at the end of twelve months; 7 recurred between one and two years; and 4 between two and three and a half years.

Some of the earlier recurrences were probably cases of incomplete removal of the growth. The high mortality, rapid recurrence, and poor end-results must cast grave doubt upon the wisdom of radical operation in this group; nevertheless, it might be justified if there was no alternative. There is, however, ample evidence, from various clinics in different countries, to show that better results are

FIG. 1.—Section of tissue removed after scraping away necrotic growth down to firm tissue.

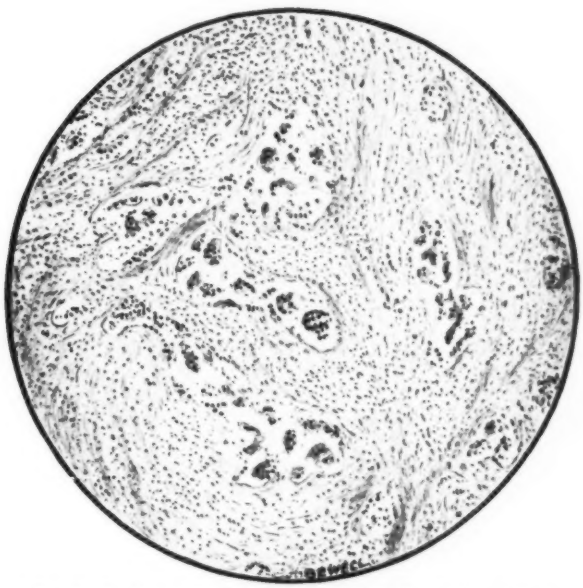

FIG. 2.—Section removed four weeks later after two exposures to radium. The mass of growth is broken up into scattered islets of malignant cells. There is a great development of young fibrous tissue.

FIG. 3.—Section removed two months after No. 1, after three exposures to radium. No malignant cells can be identified even under a high power.

FIG. 4.—Left ovary. Death after eight days. Radium at a distance of 2 cm. for twenty-four hours. × 200.

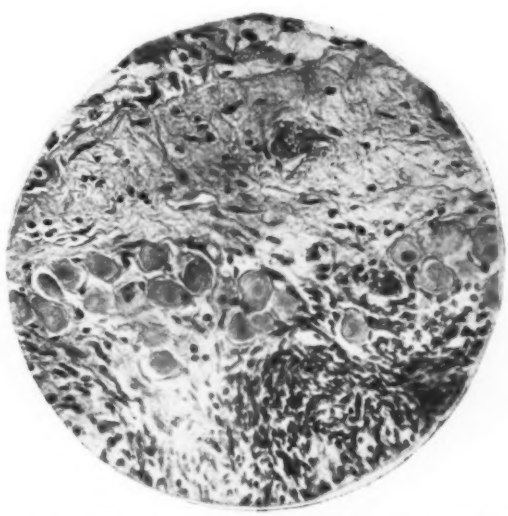

FIG. 5.—Right ovary of the same animal as No. 4, but painted with copper sulphate, in addition to radium at a distance of 2 cm. for twenty-four hours. Survival eight days. × 200.

## J. J. LEVIN AND L. E. ELLIS: HERNIA INTO THE INFERIOR DUODENAL FOSSA.

### DESCRIPTION OF FIGURES BY L. ERASMUS ELLIS.

Figs. 1 and 2 were taken before operation; Figs. 3 and 4 after operation. All skiagrams are antero-posterior, with the patient lying on his back.

FIG. 1, taken thirty-three hours after ingestion of the opaque meal, shows about one-third of the meal still in the stomach, and this organ as being hugely dilated and extending across the whole upper abdomen. Its lower border is within one inch of a transverse line across the iliac crests.

FIG. 2, taken fifty hours after ingestion of the meal (before operation), shows the cardiac end of the stomach outlined by opaque food and the pyloric end visualized by its contained gas. Its huge dimensions are evident. On the left of the pyloric end of the stomach the greatly dilated descending portion of the duodenum is shown.

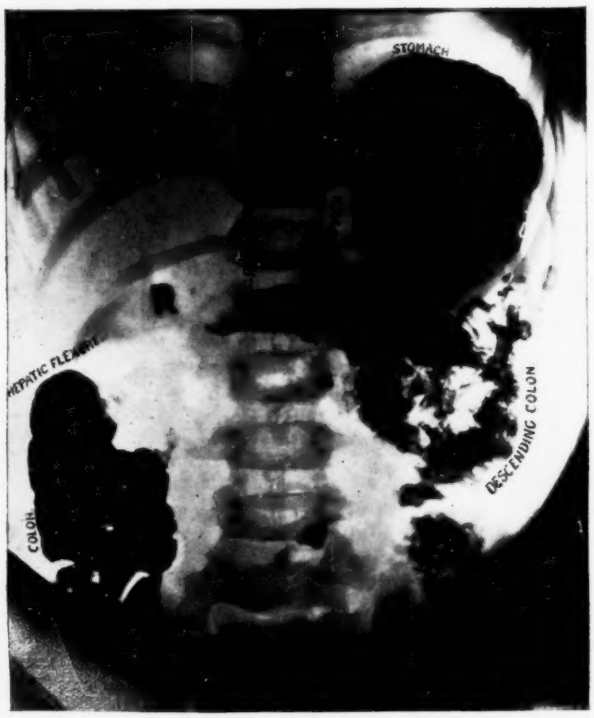


FIG. 3 (double meal), taken immediately after ingestion of the second meal, shows the stomach (after operation) of normal size, being about one-third of the size of the stomach before operation, as shown in Fig. 1. It does not extend beyond the middle line, the pylorus being over the vertebral column. The lower border of the stomach is three inches above the transverse iliac crest line. The gastric "tone" is good, the stomach being well contracted down upon its contents. The first meal, taken seven and a half hours before the *x*-ray examination, is shown to be in the colon.

FIG. 4 shows a normal condition seven hours after ingestion of an opaque meal. The stomach and practically the whole of the small bowel are empty, while the meal is in the colon.

obtained from radium than operation in this group, and the following are worth consideration.

Bumm: Of 81 borderline cases 29 per cent., and of 127 advanced cases 7 per cent., were free five years later.
Döderlein: Of borderline cases 36 per cent., and of advanced cases 11 per cent., were free five years later.
Kelly, who classifies these two groups as inoperable, had 69 cases (21 per cent.) free from disease, 7 of which were for five years and over.
Heyman: Of 26 inoperable cases, 7 (28 per cent.) were free five years later.
Adler: Of 52 inoperable cases, 13 (25 per cent.) were free five years later.
Van Seuffert: Of 62 inoperable cases, 14 (22.5 per cent.) were free five years later.
Burrows: Of 100 inoperable cases, 6 (6 per cent.) were free from three and a half to four years later.

### *Treatment by Radiation.*

The treatment of cancer of the cervix by radium is so recent, and the methods of using it are so varied, that the optimum technique is not yet agreed. The present radiological methods in cancer are comparable to the surgical practice of twenty-five years ago—namely, amputation of the cervix. With improved technique and research we may assuredly look forward to better results. It is necessary to inquire what radium can do, and the answer is that, directly or indirectly, it destroys all tissue cells if the dose be large enough. Secondly, some cells are more vulnerable to radiation than others—for example, Graafian follicles are easily destroyed, whereas lutein cells, stroma cells, muscle, and cartilage require from four to six times the dose to produce destructive effects, and therefore, relatively to the Graafian follicles, they are resistant. In the same way malignant cells are more vulnerable to radiation than normal tissue cells, and therefore theoretically radium is capable of curing cancer. This desirable result is dependent upon the application of the lethal tumour dose to every bit of the tumour, a difficult condition to attain, for the radius of action of radium is small and this action deteriorates in accordance with the law of inverse squares.

How radium acts is another question of importance, the answer to which remains unknown. We know that it acts most surely upon rapidly dividing cells, and that the first histological change seen is in the nucleus of the cell; but the structure of the cell offers no help in solving the problem, and we shall probably have to wait until we learn more about the chemistry and physics of cell life before the question is answered. The change in the nucleus appears as loss of staining power, shrinking, and fragmentation and vacuolation. Concurrently with the nuclear changes an extensive formation of connective tissue takes place in the stroma; this fibrous tissue pushes its way into the alveoli of malignant cells, breaking them up into isolated clusters. It finally surrounds them and the cancer cells fade away, until finally no trace of malignant cells can be found in the section. This formation of fibrous tissue is remarkably like that seen in atrophic scirrhus of the breast. (See Figs. 1 to 3.) Clinically radium is suitable for 90 per cent. of advanced cases, the contraindications being:

(*a*) Cases complicated with an old pelvic peritonitis.
(*b*) Cachectic cases.
(*c*) Fistulae, or where the vesico-vaginal or recto-vaginal septa are massively infiltrated.
(*d*) Cases with extensive secondary deposits and nerve root pain.

All cases, with the above exceptions, are worth treating, for the amelioration of symptoms is incredible to anyone who has not had experience of it, and the comfort of a woman no longer suffering from constant haemorrhage and foul discharge is a striking contrast to a woman whose offensive discharge is noticeable to those around her. The improvement is so great, even after one exposure, that some patients disappear for a time under the impression that all is well, only to return later when the symptoms recur. One of the drawbacks of radium is that it requires several exposures, each one of which means an anaesthetic, with which patients become disheartened. Another difficulty is to know when to stop irradiation. The ulcer is healed and the cervix looks normal, though red; a piece of tissue removed at this stage shows no malignant cells. There is thickening in the vault of the vagina and the fornices. Is it fibrous tissue or growth? Too often it turns out to be growth, but further irradiation at this stage produces no change in the irradiated area and may produce a burn.

### *Adjuncts to Radium.*

Copper and selenium have been used empirically in the treatment of cancer for a considerable time. I tried collosol selenium in a series of cases, but did not find any influence exerted on the tumour. I then tried a series of cases with collosol copper in addition to radium, and after a lengthy trial was satisfied that in some way or other it assists in the destruction of the growth. Malignant ulcers, which had contracted but became callous and refractory to further irradiation, would tolerate further exposures, and the healing process was resumed after the injection of collosol copper. I undertook some animal experiments, exposing the ovaries of cats to radium with and without the application of copper salts, and the results bear out the clinical observations. The large follicles are so quickly destroyed by radium that it is necessary to study the primary follicles; these in the copperized ovary show a greater extent of destruction than those of the opposite side, the change consisting in diminution of size, poor staining reaction, and disappearance of the ovum, with loss of definition of follicular contents. These changes are gradual, but were consistently found in all the experiments. Figs. 4 and 5 show these changes in an animal which survived eight days.

### *Pre- and Post-operative Radiation.*

The policy of irradiating a tumour before operation is limited by the formation of dense fibrous tissue, which may render the dissection of the ureters impossible. If, however, the operation be proceeded with in ten to twelve days this difficulty is anticipated. The advantages of pre-operative radiation are that it diminishes the pyogenic infection and cleans up the growth; and, secondly, it destroys malignant cells which may remain in the unexcised parametrium. I have found degenerating cancer cells in sections removed from the pelvic tissues just beyond the line of excision, after exposure to radium.

Post-operative radiation is a difficult problem, for it is not easy to avoid the bladder and rectum after the removal of the uterus. Professor Adler places radium tubes on either side of the pelvis at the time of operation, deep *x* rays to the pelvic tissues after recovery, and finds that 61 per cent. have remained free from recurrence after three years' observation, as against 52 per cent. of non-irradiated cases. I am treating all my operative cases by pre- and post-operative irradiation, but it is yet too early to consider results.

I have notes of fifty cases of cancer of the cervix treated by radium and colloidal copper more than nine months old, and I propose to consider them in detail, for reference to cases of a lesser period would have little value.

All the cases were clinically and microscopically carcinoma; all except three were inoperable and referred to me with a view to relieving their misery by radium. The growth was extensive, sometimes crowding the pelvis minor, the uterus fixed, broad ligaments involved, and the floor of the pelvis a solid plaque of growth, with pressure on the bladder, rectum, and veins. They were all given radium, provided there were no contraindications, and even though no permanent result ensued the relief obtained from haemorrhage, fetid discharge, and foul ulcer was an inestimable boon in their last phase. It will be realized that the utmost expected in such cases was palliation of symptoms; nevertheless I think in some cases life was prolonged as well.

The three exceptions mentioned were comparatively early cases, in which the disease was clinically limited to the cervix, but their general condition was too poor to allow of the radical operation being undertaken. The three were referred to me by one or other of my colleagues for treatment by radium. One of them died, a month after the initial exposure, from an acute toxaemia of doubtful origin. The other two remain alive and well two years and seven months and two years and six months after treatment; one of them was treated by *x* rays in addition to radium, the other by radium alone.

Of the 50 cases, 38 are dead and 12 living. The 12 living are well and free from symptoms, and so far as physical examination can tell are free from growth for $2\frac{7}{12}$, $2\frac{6}{12}$, $2\frac{5}{12}$, $1\frac{11}{12}$, $1\frac{10}{12}$, $1\frac{9}{12}$, $1\frac{8}{12}$ years, 1 year, $\frac{9}{12}$, $\frac{8}{12}$, $\frac{8}{12}$, $\frac{8}{12}$ year.

Of the 38 cases dead, 27 were relieved of all symptoms, 3 abandoned treatment, 8 were unrelieved, 5 of whom were recurrences following operation, and 3 were so extensive that only one exposure was given owing to the risk of fistula formation.

Of those with complete relief of symptoms, 9 lived between one and one and three-quarter years; 8 between six and twelve months; and 10 between two and six months.

*Symptoms.*

*Haemorrhage*, which varied from slight irregular losses to severe flooding, ceased within a few days of the first exposure. In two cases the haemorrhage returned after several exposures and was so free that ligature of the internal iliacs was undertaken in order to control it. These two cases were probably examples of irradiation of a tumour which had become radio-resistant. I had also to ligature these vessels in a third case, but here the haemorrhage was a true secondary haemorrhage occurring in an extensive and virulently infected growth, and, following the exposure, a massive necrosis of tissues took place.

*Bloody Discharge.*—This undergoes rapid improvement, the blood ceasing within a few days, the discharge becoming thinner and losing its offensive character in three weeks, concurrently with the cleansing and healing of the ulcer. At the end of a month it is watery and small in quantity with a musty odour, and at the end of six weeks has ceased.

*Pain.*—In some form or other pain is usually present, but is either of the nature of a long-standing backache, which remains uninfluenced, or a dull ache in the pelvis due to infection and oedema of the cellular tissues. This type of pain is commonly relieved, and patients who have been taking phenacetin and bromides at night are able to do without after the first exposure. The late pains due to involvement of nerve roots or secondary deposits in the spine are not influenced in any way.

*Local Ulcer.*—The ulcer which at the first exposure admitted the tips of two fingers will, at the end of a month, barely admit one tube of radium in its metal and rubber screens, which is equivalent in thickness to the ordinary lead pencil, and at the end of six weeks the cervix, though red, is covered with epithelium and has a normal appearance. The general condition improves with the disappearance of the infected focus; the colour, appetite, and general well-being undergo a great change for the better.

A serious limitation to treatment by radium in early cases is that short of opening the abdomen it is not possible to say whether the glands are involved or not, and, if they are, the irradiation of the primary growth is merely palliative. The glands are found to be infected with growth in 30 per cent. of cases that come to operation, which should exclude the advocates of radium for early cases until they are able to show how they deal with these deposits effectively. Daels has introduced an ingenious operation for dealing with pelvic deposits by passing radium from the iliac fossa to the perineum on a chain. In this way he irradiates a variable area of the pelvic cavity. This operation does not meet the fundamental rule that the radium must be placed in contact with the growth, for its power diminishes in accordance with the law of inverse squares, and while the tube may be placed opposite the sacro-iliac synchondrosis the infected gland may be some distance away from it.

Opening the abdomen and implanting the radium in the growth is the only way of being certain that it is placed where it should be, and this, while very satisfactory up to a point, is limited by the fact that it may have to be repeated several times. The Erlangen method of deep *x*-ray therapy was originally proclaimed as a cure for cancer of the cervix, but its value was soon assessed, and it is now reserved for the palliation of symptoms in inoperable cases, prophylactic irradiation after operation, and the irradiation of pelvic tissues in conjunction with radium to the cervix.

CONCLUSIONS.

1. That for cases of carcinoma clinically limited to the cervix the only treatment is operative.

2. That for cases which have clinically invaded the peri-cervical tissues the treatment is by radium to the cervix and *x* rays to the pelvic tissues.

3. That salts of copper play an important though subsidiary part in treatment by radium.

4. That pre- and post-operative irradiation is of considerable value.

I am indebted to Professor Brasch for permission to use his diagrams and slides.

# A CASE OF HERNIA INTO THE INFERIOR DUODENAL FOSSA.

BY

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*WITH X-RAY PLATES AND REPORT*

BY

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RADIOLOGIST, TRANSVAAL MEMORIAL HOSPITAL FOR CHILDREN.

(*With Special Plate.*)

THERE seem to be certain minor differences in the classification of the fossae round about the duodenum. Walton refers to an inferior duodenal fossa, a superior duodenal fossa, and a paraduodenal fossa. This also appears to be Cunningham's classification. Moynihan, according to Makins, in *Burghard's System of Operative Surgery*, classifies them as right duodenal hernia and left duodenal hernia. His right duodenal hernia apparently corresponds to both the superior and inferior ones in the classification of the other writers, and his left duodenal hernia corresponds to the paraduodenal variety, although he calls it a hernia into the duodeno-jejunal fossa. Beesly and Johnston mention four fossae—namely, superior, inferior, paraduodenal, and retroduodenal.

E. H. B., born December 15th, 1914.

*History.*—The mother states that she had an easy labour, but was taken to the hospital immediately after the birth of the child because she had fits and because there was something wrong with her kidneys. The baby (the subject of the present paper) was left with a nurse. He vomited practically from birth and the vomiting was of a projectile character. He was fed on sherry, whey, and brandy and white of egg for the first month or so; then various patent foods were tried, but he vomited them all. When he was 5 months old the doctor advised nutrine. At first he vomited this, but after about five weeks he kept it down and did not vomit again, except when he was given anything else. Up to the age of 2 years he could keep nothing else down. He gained a little weight but lost it again. His weight went up and down, never very much up, and at 2 years of age—as far as his mother can recollect—he was 6 lb. under the weight for his age. At this age he would be lying in his mother's arms and suddenly he would go into a fit. The doctor had prescribed two powders a day for him, and the mother thinks that these powders kept his bowels moving, for when she stopped them he did not seem so well and was a little constipated. When he was 2 years old his sisters contracted measles, but he did not contract the disease. He vomited continuously, however, and was fed on brandy and egg-flip. Although he did not contract measles another doctor who saw him later said that he was getting over an attack of pneumonia. When the boy was in his third year he seemed to improve in health, and he had no other disease or illness beyond vomiting when he was given anything except bread-and-butter and a little jam, strained soup, and porridge. If the soup were not strained, he vomited it. Oranges, bananas, grapes, currants, and raisins, or cake containing currants and raisins, seemed specially to cause him to vomit. He always had a bad breath and his stomach made a rolling gurgling noise at night, more especially immediately before a vomiting bout. If he ate any of the above-mentioned things he rolled on the floor in pain until he vomited. He was active and played about like any ordinary child, and was an average child at school. His mother gave him Epsom salts every Sunday, and thought they kept him more or less in health. He was brought to me when 8½ years old (November 21st, 1923), some days after a birthday party at which he had had, amongst other things, fruit and ice-cream in large quantities.

*Family History.*—The families of the father and mother are healthy. This boy was the fifth of five children; the eldest was a full-time child, but died two hours after birth, cause unknown; the second is a girl 15 years old and healthy; the third is a girl 12 years old and healthy; the fourth was a girl who died at the age of 11 days, because she could not feed properly owing to some deformity.

He was a small, "pot-bellied" boy, who seemed wasted but whose abdominal muscles seemed to be over-developed. He did not complain of pain anywhere in the abdomen, nor was there any tenderness in the abdomen. The stomach was obviously enlarged on percussion, but no tumour could be felt over the pyloric region. There was a good deal of gurgling in what I took to be the caecum. He was admitted to the Memorial Hospital for Children, put on ordinary diet, and kept under observation from November 22nd to 30th, 1923, and during that time he did not vomit. He did not even vomit the aperient which was given him twenty-four hours before *x*-ray examination. On the majority of days definite full peristaltic waves were observed, commencing in the left hypochondrium and passing over the epigastric region into the right hypochondrium.

### X-RAY REPORT.

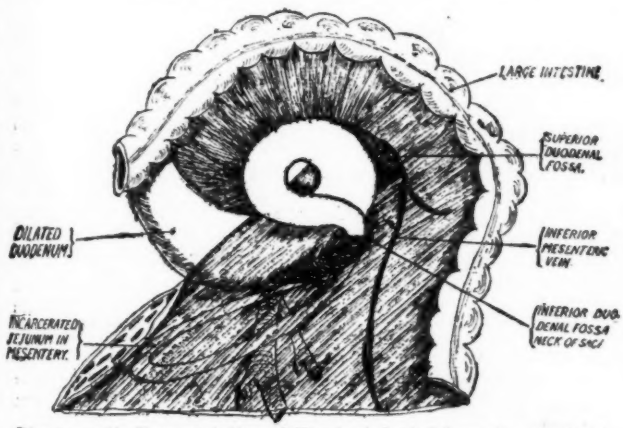
Dr. Erasmus Ellis reported as follows:

A series of seven skiagrams was taken, the first eight hours, and the last seventy-four hours, after ingestion of the opaque meal. (See plate.)

The stomach is hugely dilated, extending practically across the whole abdominal cavity in its upper portion. The duodenum is also immensely dilated. Vigorous peristaltic movements are seen, but the stomach fails to empty for many hours.

Nine hours after ingestion about one-tenth of the opaque meal is seen in the colon; none in the small bowel. This suggests that some food escapes and then the stomach fails to empty further for a considerable time. Twenty-six hours after ingestion about one-third of the food has escaped from the stomach, and is seen partly in the small and partly in the large bowel. Thirty-three hours after ingestion (Fig. 1) about two-thirds of the opaque meal have escaped from the stomach, and four-fifths after fifty hours (Fig. 2), this latter being partly in the colon distal to the splenic flexure and partly in a viscus overlying the descending colon (probably, in the light of the subsequent operative findings, the herniated portion of the early jejunum). Seventy-four hours after ingestion a trace of the opaque meal is still in the stomach and a little in the colon, but most has been evacuated.

It was obvious that the boy could not go on as he was and that a laparotomy was strongly indicated. From the history, signs, and symptoms, and the appearance of the skiagrams, a tentative diagnosis of persistent congenital hypertrophic pyloric stenosis was made, and on November 30th I operated, assisted by Dr. D. J. Dauth (Honorary Surgical Registrar, Johannesburg Hospital); Dr. B. Weinbren (anaesthetist to the Johannesburg Hospital) gave the anaesthetic.




Diagrammatic Representation of Hernia (adapted from Cunningham).

*Operation.*

A right pararectal incision was made extending from just below the costal margin to about an inch below the umbilicus, and on looking into the abdomen after the peritoneum had been opened the stomach and duodenum round about the pylorus seemed to be inflamed, but as things lay without being disturbed the stomach did not seem to be much enlarged. When, however, one put in one's hand to pull down the stomach one found that it was enormously dilated and that the greater part of it was pushed well up under the left costal margin. The duodenum when traced round was found to be dilated to about five times its normal size, this dilatation extending right up to the duodeno-jejunal flexure. Here one got lost and could not at first find the commencement of the jejunum. On handling the small intestine and its mesentery, however, one saw a tumour in the mesentery to the right of the vertebral column, which turned out to be bowel shining through the mesentery. It was decided to incise the peritoneum over this bowel. When this had been done there lay what subsequently turned out to be the first fifteen or eighteen inches of the jejunum. By tracing this bowel up to a point where one expects to find the duodeno-jejunal flexure, one came to a constricting ring composed of peritoneum. When this ring had been cut through, the loop of small intestine which had been imprisoned in the mesentery, and which was the first fifteen to eighteen inches of jejunum, was free, and the jejunum could be traced up to the duodeno-jejunal flexure in the one direction, and down on to the jejunum and so on in the other direction. This loop of small intestine was dilated slightly —not nearly as much as the duodenum, but from a point where the distal end of the loop emerged through the constricting ring the small intestine was collapsed, as also was the large intestine. The inferior mesenteric vein was seen in its normal situation and was not associated with the neck of the sac anywhere, but was well to the left of the constricting ring (see diagram). After the loop of bowel had been released from its "sac," the continuity of the peritoneum of the mesentery was restored by means of a purse-string suture. As the margin of the inferior duodenal fossa which formed the restricting ring had been cut through, there seemed no further danger of another hernia. The boy in addition to this condition had a general visceroptosis. His caecum was completely surrounded by peritoneum and had a long mesentery, and the caecum could be placed anywhere in the abdomen. The pancreas was also completely surrounded by peritoneum and had a mesentery. It was not considered wise, however, to do anything further, as the boy's condition was not too good. The abdomen was closed in three layers and subcutaneous salines were continued for two days. Except for the vomit subsequent to anaesthesia, he has not vomited. Stitches were removed on the ninth day; the boy was allowed up on a couch on the tenth day. From the third day onwards he was given solid food, including fruit, baked apples, peaches, etc., and liquid paraffin three times a day. His bowels have moved well without the assistance of enemas, his "pot-belly" is gradually disappearing, and he says that he feels entirely different from what he felt before the operation.

He was *x*-rayed again on December 11th by Dr. Erasmus Ellis, who reported as follows:

"A series of *x*-ray plates taken with opaque food in the gastro-intestinal tract, eleven days after operation, shows practically a normally functioning alimentary canal." (Figs. 3 and 4.)

The child was kept in hospital over Christmas, and apart from restricting fluids no other restrictions were made in his diet. He ate what all the other children ate, in large quantities, yet did not vomit, nor did he even feel sick. He was discharged from hospital on January 1st, 1924, looking well, feeling well, and eating everything without any discomfort or subsequent vomiting.

In thinking over this case I have unconsciously borne in mind Walton and Cunningham's classification, and in my opinion the case was one of a hernia into the inferior duodenal fossa—that is, a right duodenal hernia according to Moynihan. I think so because the neck of the so-called "sac" looked upwards and to the left. In this Dr. D. J. Dauth agrees with me. In any case I do not see how the incarcerated bowel could have got into the position in the mesentery in which we found it if it had not got there through the inferior of the two right fossae. Makins states, in his discussion of the operation for the relief of strangulation of a right duodenal hernia, that the neck of the sac is situated to the right of the vertebral column at the left end of the sac, and that the *superior* mesenteric artery occupies a similar position in the anterior boundary of the neck of the sac that the *inferior* mesenteric artery occupies in a paraduodenal or left duodenal hernia, but goes on to say that the wandering of the neck of these herniae appears to be responsible for some of the rare varieties of retromesenteric herniae which have been observed. In this particular case I am quite certain that there was no vessel in the anterior boundary of the neck, for after I had made my incision over the "tumour" I slipped my finger into the constricting ring and cut through it there was no bleeding. Therefore there could not have been a vessel of any size in the neck. Possibly the superior mesenteric artery was behind the incarcerated bowel in this case; certainly it did not get in my way at all in relieving the strangulation. Dr. R. A. Ross (Honorary Surgeon to the Transvaal Memorial Hospital for Children), who was present at the operation, is doubtful about this from an anatomical point of view. At the time of the operation he suggested a search for the superior mesenteric artery, but I was naturally a little excited in dealing with such an unusual case and did not pay sufficient attention to his suggestion, and therefore I am unable to clear up this point. It is certain, however, that the incarcerated bowel was in the mesentery and that the opening of the sac was in the situation of the inferior duodenal fossa and that it looked upwards and to the left. It was, however, not to the right of the vertebral column. It was a little to the left, if anything. I am unfortunately unable to lay my hands upon Sir Berkeley Moynihan's writings on the subject of internal herniae, and therefore am handicapped in the discussion of this case. I learn, however, from Makins that Moynihan collected seventeen cases of right duodenal hernia as against fifty-seven of left. This case should, I think, be classified among the rarer right variety.

In conclusion I should like to express my thanks to Miss D. M. Gordon for the excellent diagram which she has made for me, and also to Drs. Dauth and Weinbren for their assistance.

*Note.*—Since writing these notes the December issue of *Surgery, Gynecology, and Obstetrics* has come to hand containing an article entitled "Duodenal hernia—a misnomer," by Dr. Edmund

Andrews of Chicago, which rather emphasizes the handicap of not having access to Sir Berkeley Moynihan's book on the subject of duodenal hernia. My case seems to support Dr. Andrews's theory that these cases are of congenital origin.

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# THE TREATMENT OF HAEMORRHOIDS BY SUBMUCOUS INJECTIONS OF CHEMICALS.

BY

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## *WITH A DESCRIPTION OF THE PATHOLOGICAL CHANGE PRODUCED,*

BY

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### I.—By H. GRAEME ANDERSON.

THE method of treating piles by the injection of chemicals into their substance was first brought to my notice in 1907 by my teacher and friend Mr. Swinford Edwards.

Since that time I have treated by this method quite a large number of haemorrhoid cases, experimenting with various types of chemicals of varying strength, and endeavouring in many ways to improve the technique. During the same time I have collected and studied almost all the contributions published on the subject. Further, during 1923, to settle the question of the pathological changes involved, I injected a series of haemorrhoid cases and then excised the piles—with uninjected control piles from each case—at daily intervals. These specimens were submitted to Dr. Dukes for microscopical examination, and the results of his investigation are recorded below.

#### *History of the Injection Method.*

This method did not originate in America as is generally recorded, but was first carried out by Mr. Morgan in Dublin in 1869. He used a solution of iron persulphate, and so applied a method to haemorrhoids that had been used in the treatment of naevi since 1836.

William Colles, another Dublin surgeon, in 1874 injected a case of piles, using iron perchloride. He had seen Mr. Cussack treat piles by the introduction of a needle coated with silver nitrate into the centre of each. Colles thought that a better result could be obtained by hypodermic injection. In 1871 carbolic acid was first used as the injecting agent by Mitchell of Clinton, Illinois. At first his method was kept a secret, but knowledge of it soon spread. The secret was sold to various unqualified people who were known as travelling pile doctors. These itinerants began to sell the secret remedy to others, who traversed the country in all directions "till their handbills fluttered on the shores of the Pacific Ocean." Professor E. Andrews of Chicago in 1876 discovered the secret from one of the "quacks" and carried out an exhaustive investigation of the whole subject. He collected the results of 3,300 cases. Mitchell used one part of carbolic acid to two parts of olive oil. Most of the "irregulars" used strong solutions of carbolic, ranging from 27 to 95 per cent.

Once the secret was laid bare many qualified medical men—eminent and otherwise—gave the method a trial, and it took some twenty years before three definite schools of opinion on the subject were established. The first school, headed by such authorities as Allingham senior, Mathews, and the Andrews, considered the method unsafe and dangerous. The second school, the chief exponents of which were Agnew, Shuford, Adler, and the Martins, believed in injecting strong solutions of carbolic acid—that is, over 20 per cent. and ranging to 95 per cent. They aimed at removing the piles by sloughing them off. The third school believed in using weak solutions of carbolic acid—that is, from 5 to 20 per cent., injecting small quantities, and aiming at producing mild irritative changes with ultimate fibrosis and shrinking of the tumours. This school had as its advocates Hoyt, Yount, Wright, and others. For the past thirty years the "strong" school has been dying out, and it has few advocates at the present day. On the other hand, the "weak" school with succeeding years has become more firmly established, and is the one most generally followed by those who use this method at the present time. Personally, I use very rarely any carbolic solution over 10 per cent.

#### *Selection of Cases.*

The injection method, in my opinion, is a very useful one indeed, and in quite a large proportion of cases excellent results can be obtained. External piles should on no account be injected. Internal piles, complicated by fissure, fistula, or large external skin tags, and those that are inflamed, ulcerated, or gangrenous should not be injected, but submitted to ligature or clamp and cautery operation. Similarly, where the piles are very large and numerous, of old standing, and with much fibrotic change, these cases are unsuitable for injection and speedier and better results are obtained by operation. Patients with haemorrhoids who have long anal canals, hypertrophy or spasm of the sphincters are not suitable for injection.

Uncomplicated internal piles are the only ones that should be treated by injection, and I agree with Albright, who says that "the idea of universal applicability should never have been advanced for this treatment." Pennington, in the latest edition of his book, states that "it is estimated by advocates of the injection method that not over 50 per cent. of cases in America are suitable."

#### *Technique.*

The rectum, of course, should be empty, and this is usually so in the majority of patients if the bowels have acted in the morning. If constipation is a symptom, then it is better to order a purgative to be taken two nights before the visit. Confection of senna or castor oil will be found the most suitable. Enemata are better avoided as they increase the congestion of the haemorrhoids. Glycerin suppositories act just as quickly and the local effects are less drastic.

The patient should be placed on his side lying partly over on the abdomen with the lower leg only slightly flexed and the upper leg fully flexed at hip and knee. I use a strong projection lamp, as good illumination is most essential. There is no objection to injecting the piles while they are prolapsed, but on the completion of the injection the piles must be instantly reduced and returned above the sphincters.

In the majority of cases a speculum has to be used. I use one of two types, either the ordinary 3 in. Kelly's proctoscope with a smooth metal collar, or one which I have devised—a modification of the Hirschman speculum, a little longer and with a smooth metal collar (Fig. 1). A speculum with a slide is one to be avoided, especially if it has a closed end. The piles will be found to prolapse into the lumen of the speculum and by gently and slowly withdrawing the latter for about half an inch and then pushing it gently inwards again a good idea will be obtained of the size of the piles.

The pile to be injected is then gently caught at its upper end by a long pair of angled forceps which I have devised for the purpose (Fig. 2). The instrument is allowed to hang on to the pile, and by its own weight it steadies the latter by gentle traction and renders easy the insertion of the needle. I use a special syringe with a glass barrel of fine calibre which can only hold 10 minims of the solution. The syringe is metal bound, and has thumb and finger rings. The needle is two inches long, of not too fine a calibre, and has a bulbous shoulder half an inch from the tip. This syringe is a safe one for beginners to use, as even if the total contents are injected into one pile no harm can accrue; and again, the shoulder on the needle prevents the latter from being inserted more than half an inch into the substance of the pile (Fig. 3).

The injection is made into the upper part of the pile about half an inch to an inch above the level of the anal valves or papillae. This is an important point. The rectal mucosa is insensitive to pain or light touch, and if the injection is made at the right level the patient should be entirely unconscious of it. No local anaesthetic is required. With nervous people it is as well to smear the speculum

FIG. 1.

with a lubricant containing 10 per cent. cocaine. Should the insertion of the needle or the injection of the fluid cause pain it is certain that the injection has been made at too low a level. The lining of the anal canal is extremely sensitive to pain. The injection method requires a fair amount of skill in its performance, and the beginner, before

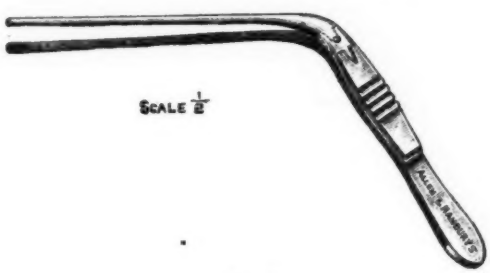


FIG. 2.

attempting it, would be well advised to see the procedure carried out by a competent proctologist.

The injection of the fluid should be done slowly, when it will be noticed that the injected pile swells up and in some cases obscures from the view the other piles that are present. It has often been stated that as the pile swells it becomes whitish in colour. This very rarely happens, and if it does a slough is very liable to form later. On many occasions at St. Mark's Hospital, while a patient was under an anaesthetic and about to undergo an operation, I have injected 5, 10, and 20 minims of 10 per cent. carbolic solution, on

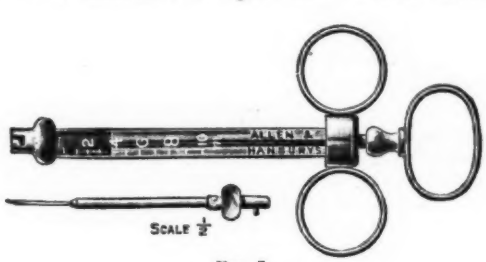


FIG. 3.

other occasions the same amounts of a 20 per cent. solution, and have demonstrated to onlookers that no such blanching occurs as a rule. On the other hand, the injected pile often becomes much deeper in colour, and this may be due to traumatism from the needle with a slight haemorrhage into the pile substance. It is interesting to note in connexion with this fact that Mitchell, the originator of the carbolic acid injection method in America, partly abandoned the method and adopted the plan of tearing the interior of the piles to pieces by means of angular needles set in handles. An injection of 3 to 5 minims of the solution is made into smaller piles, and 5 to 7 minims into larger piles. The needle is left *in situ* for about a minute and then withdrawn. Sometimes there is a slight oozing of blood from the puncture, but the application of a little adrenaline solution on a swab soon arrests this. The pile clip is unfastened and the speculum is withdrawn. A little adrenaline and chloretone ointment is then squeezed into the rectum to act as a protective dressing to the injected piles. Should the injected pile prolapse it is immediately replaced.

The patient can go about his ordinary business immediately the injection procedure is over. He should abstain from exercise or heavy work for two or three days. He is instructed to replace the piles immediately should they prolapse. Liquid paraffin is ordered and the bowel should be allowed to act forty-eight hours after the injection is made. As a rule I examine my patients forty-eight hours after injection to make sure that all is well. The injected pile is then felt to be swollen and firm in consistence with the induration running upwards and gradually diminishing. In a week's time the injected pile has begun to shrink, and another injection may be given into the same pile, or another pile may be then treated in a like manner. One, two, or three piles may be injected at the same time, but as a rule I only inject one or two on each occasion. The number of injections into each pile varies with the case: two to four injections are usually required. Haemorrhage is arrested like magic from the first injection, and as the shrinking proceeds the prolapse ceases or becomes much less. Although haemorrhage and prolapse may disappear after one or two injections, the piles may still be visible through a speculum, but much smaller in size. Some patients at this stage are so pleased with the result that they discontinue treatment. To obtain a good cure it is better to go on injecting each week till the piles no longer project into the speculum.

### *The Chemicals used in Injection.*

At St. Mark's Hospital I have experimented with the following chemicals: carbolic acid, quinine and urea, iron perchloride, ergot, lead acetate, alcohol, and formalin. There is no doubt that carbolic acid is the best of all, though quinine and urea gives almost as good results. The latter should be used in 5 or 10 per cent. solutions. I was disappointed in the results when using ergot and also lead acetate. Iron perchloride gives quite good results. At one time at St. Mark's I was using alcohol, injecting it subcutaneously around the anal margin for the treatment of pruritus, and I tried it as a submucous injection in the treatment of piles. The results were disappointing as pain occurred and small sloughs formed. I was tempted to try formalin in the hope that it might aid in shrinking and hardening the pile substance. At first I used 10 per cent., which was much too strong as it produced in three cases great pain, localized sloughing, and marginal abscess, although ultimately the piles were cured by sloughing. Later I used 1/2 per cent. formalin, but even this caused pain. Then for a time I used 1/4 per cent. formalin in the 10 per cent. carbolic acid glycerin solution. For the past few years I have confined myself to the use of carbolic acid. When this was used in strength over 20 per cent. in all cases sloughs were produced and in some cases marginal abscesses; and although the piles were ultimately cured it was only at the expense of time, pain, sloughing, and abscess formation.

I am of the opinion that 10 per cent. carbolic acid in equal parts of glycerin and distilled water is the best solution to use. With this solution, injected at the proper site, the best and safest results are obtained, and no complications such as pain, haemorrhage, sloughing, ulceration, and abscess formation should occur. I am aware that a great many use 20 per cent. carbolic, but with a solution of this strength one can never be sure of avoiding sloughing. In many cases mild sloughing occurs and the ulceration produced may give rise, through imperfect drainage, to more

distress than the piles. The latter may be ultimately cured, but the healing process may be unduly prolonged. In my opinion the whole object of the injection method is defeated by using strong solutions.

*Recurrence.*

There is no doubt that recurrences do take place, and they usually become evident in from three to five years' time. The Martins treated by injection 4,200 cases, and estimated the recurrence rate at 15 per cent. Even if recurrence does take place, patients are quite happy to return for a further course of injections.

In treating a case of piles by the injection method it is advisable to keep a systematic record of the date, site, and amount of injection solution used at each sitting. I have a diagram stamped in my case book and record the injection made in different coloured inks.

II.—By CUTHBERT DUKES.

The pathological changes provoked by carbolic acid injections have been studied microscopically in ten patients, in each of whom one haemorrhoid was injected in the usual way, and this injected haemorrhoid, together with a control not injected, was subsequently removed by operation—in one patient in one day, in the remainder after 2, 3, 4, 5, 6, 7, 12, 14, and 21 days. The pieces of tissue were fixed, embedded in paraffin, and serial sections cut from the injected haemorrhoid and control haemorrhoid of each patient.

The haemorrhoid removed one day after injection showed the vessels dilated and engorged with blood and the surrounding tissues oedematous, containing much extravasated blood, and infiltrated with polymorphonuclear leucocytes. There was clear evidence of active emigration of these through the vessel walls into surrounding tissues. No signs of thrombosis were seen. The chief feature at this stage was the close packing of the oedematous tissues with innumerable polymorphs.

The haemorrhoid removed two days after injection showed no pathological changes to distinguish it from the uninjected control. It is probable that in this case the piece of tissue removed was not reached by the carbolic acid.

The haemorrhoid removed three days after injection did not show any noteworthy change in the vessels themselves, but the surrounding tissues were still oedematous, contained extravasated blood, masses of polymorphonuclear leucocytes, some lymphocytes, and very many large mononuclear cells. The abundance of these large mononuclear macrophages was the characteristic feature at this period. Many were actively phagocytic and had ingested red blood cells or leucocytes. They appeared to be playing the part of scavengers. Proliferation of the fixed connective tissue cells was noticed at the margin. There was no evidence of thrombosis in any of the vessels.

The haemorrhoid removed four days after injection presented much the same appearances as its predecessor, but the leucocyte infiltration was less conspicuous and the macrophages were relatively more numerous. These large mononuclear cells were arranged in clusters round the blood vessels. There was clear evidence of proliferation of fibroblasts. No sign of thrombosis was detected.

The haemorrhoid removed five days after injection showed commencing thrombosis in many vessels. No intravascular clotting was seen in the control injected haemorrhoid from the same patient. The polymorph infiltration of the surrounding tissue had almost disappeared, but large mononuclears and young connective tissue cells were plentiful.

The haemorrhoids removed six and twelve days after injection showed very little change as compared with the control.

In the haemorrhoids removed seven, fourteen, and twenty-one days after injection thrombosis was found in each case, but apart from some increase in fibrous tissue and the budding of new capillaries no other significant change was noted.

*Manner of Action of Carbolic Acid.*

Carbolic acid, being a powerful irritant to the tissues, initiates an aseptic inflammation, characterized by dilatation of the vessels, emigration of leucocytes, and transudation of lymph. By these means the alien liquid is diluted and removed; thereafter the inflammation quickly subsides. All the changes observed microscopically represent the effort of the tissues to repair an injury.

The curative effects of injections of carbolic acid do not depend upon any specific action of this chemical substance. The mere introduction of a needle into the haemorrhoid results in damage to many blood vessels, and in these thrombosis is likely to follow. Moreover, the cellular injury which this poison inflicts on the delicate lining cells of the capillaries is also likely to contribute to intravascular clotting. It is possible also that the contraction of newly formed fibrous tissue may constrict blood vessels or even occlude them, but little sign of this was noticed in this histological study. Perhaps, after longer periods, this would have been more evident.

The early inflammatory changes which occur in the first three days do not play any important part in the cure of haemorrhoids; it is the secondary changes, in particular the intravascular clotting, and subsequent fibrosis, to which any beneficial effect must be ascribed.

## AN ATTEMPT TO VACCINATE CHILDREN AGAINST TUBERCULOSIS.

*(A Preliminary Note.)*

BY

NATHAN RAW, C.M.G., M.D., M.R.C.P.LOND.,

LORD CHANCELLOR'S VISITOR; HONORARY CONSULTING PHYSICIAN, PRESTON HALL TUBERCULOSIS COLONY.

IN the BRITISH MEDICAL JOURNAL of April 23rd, 1921, I described a new tuberculosis immunizing vaccine, which I had prepared from dead cultures of tubercle bacilli that had become attenuated after continuous subculture in my laboratory for a period of fourteen years.

The immediate results of treatment of a large number of cases of all forms of tuberculosis have been very encouraging, but the final results cannot be estimated for another two years.

I am now directing my attention to the even more important problem of protecting children against infection, on much the same lines as the use of an antityphoid vaccine against typhoid fever, which was such a brilliant success during the war.

The problem of tuberculosis resolves itself into the question of immunity. The protection of the community by some safe scientific method of active immunization is the only effective way by which this preventable scourge can be eradicated.

*Animal Experiments.*

In the attempt to produce some active immunity in animals I have inoculated five series of rabbits and guinea-pigs, extending over a period of fourteen years.

I.

The *first series* of animals was inoculated with Koch's old tuberculin. Four weekly injections were given, followed in another month by a subcutaneous injection of 1/2 mg. of human tubercle bacilli of virulent culture. All these animals became infected with generalized tuberculosis and were apparently not influenced by tuberculin.

II.

The *second series* was given large doses subcutaneously of Koch's bovine tuberculin (bacillary emulsion). A weekly injection was given for four weeks, and after an interval of one month they were given 1/2 mg. of living bovine bacilli. All these animals developed acute generalized tuberculosis and died in four months. No protection appears to have been established against the laboratory dose of virulent bacilli.

III.

In the *third series* I attempted to produce active immunity in the animals by giving them subcutaneously four weekly doses of living bacilli of attenuated cultures of fourteen years' growth. These cultures, although growing luxuriantly, were non-pathogenic to animals. None of these animals developed tuberculosis, and on examination in six months showed no trace of infection.

The animals were then given the usual laboratory dose of virulent bacilli, and carefully watched for six months. The loss of weight was not nearly so pronounced as in the other series; but on being killed all the animals were found to be infected, but to a very much less extent than the preceding ones—in some cases only a few glands, in others a more or less generalized infection.

IV.

In the *fourth series* one half of the animals were given subcutaneously four weekly doses of living human attenuated bacilli, and the other half were given the same doses of living bovine attenuated bacilli. None of these animals showed any signs of infection in six months. The animals which had received the protective doses of human bacilli were then given 1/2 mg. of living virulent bovine bacilli, and the animals which had received bovine attenuated bacilli were given 1/2 mg. of virulent human bacilli. In six months the whole series of animals was most carefully examined, and the results were much more encouraging. Two of the animals showed no infection, but all the others were more or less positive, from a few isolated glands to a mild generalized infection, but to a decidedly less extent than in any of the preceding ones. In all probability these animals would have recovered from this laboratory dose.

V.

*Fifth Series.*—The object of this experiment was to show if it was possible to protect animals against a virulent infection by giving them two prophylactic injections of a tubercle vaccine prepared from the dead cultures of human tubercle bacilli which had been attenuated by continuous subculture for sixteen years, which represented the 212th generation. Five rabbits were given two injections of 0.01 mg. of vaccine subcutaneously, and were kept under observation for a month. No reaction followed the vaccine; they gained weight and were apparently unaffected. Five control rabbits, and the rabbits which had been vaccinated, were then given 1/10 mg. of a virulent culture of bovine bacilli, supplied to me by Dr. Schutze. Very careful observations were made. The five animals which had not been protected steadily lost weight, and they all died within four months. They all showed generalized tuberculosis in all organs.

The five animals which had received protective vaccine are all alive to-day and in apparently good health, and I propose to keep them alive for another few months before they are examined. These animals have been protected from bovine infection by means of a vaccine prepared from human attenuated bacilli.

In my next series I propose to attempt to immunize guinea-pigs in the same way, but this may be more difficult owing to their great susceptibility to tuberculosis.

*Conclusions.*

1. It appears to be possible to immunize animals against tuberculosis by means of a protective vaccine prepared from attenuated bacilli.
2. The duration of the immunity is not yet known.
3. It seems to be probable that we may be able to protect children against infection in the household. We must wait for some years before this can be finally established. All children over the age of 1 year who are living in the same house with a tuberculous member of the family ought to be protected against infection, and it is in the early years of life that such infection usually occurs.

*Vaccination of Children.*

Encouraged by these results, I have treated 412 children, varying in age from 1½ to 14 years, one of whose parents was suffering from pulmonary tuberculosis, with two prophylactic doses of a vaccine prepared from dead cultures of attenuated bovine bacilli. The injections were given at an interval of two weeks. No reactions were observed, and in no case has there been any untoward symptom. All the children were treated at the request of a parent.

Up to the present I know of no child who has developed tuberculosis, but we must wait for at least ten years before a final judgement can be given of its efficacy in all cases.

From a long observation of tuberculosis I am convinced that infection takes place most commonly in early life, and if we can with complete safety give some active immunity to those children who are directly exposed to infection at home, we will have taken a long step in the direction of prevention, which, after all, is the key to the problem.

# Memoranda:

## MEDICAL, SURGICAL, OBSTETRICAL.

### PARTIAL HEART-BLOCK COMPLICATING AORTIC INCOMPETENCE FOLLOWING RHEUMATIC FEVER.

THE case here reported is of interest because the condition is apparently rare, and also because the symptoms were more than usually severe in so small a degree of heart-block. Though, in mitral stenosis, acute inflammatory changes are common in the myocardium, causing heart-block, Heatherley in his recent book states that he has not yet seen the condition complicating aortic incompetence.

A man, aged 28, was admitted to the Royal Mineral Water Hospital, Bath, on May 5th, 1924, complaining of pain and stiffness in the hands, shoulders, knees, and ankles, following an attack of rheumatic fever in February.

He stated that he suffered from palpitation, was breathless on exertion and easily exhausted, and found himself sweating profusely even when at rest. From time to time he felt very giddy and had "fainting turns." The man presented the typical picture of aortic incompetence. There were no signs of accompanying mitral stenosis. Electrocardiographic tracing revealed the P-R interval lengthened, measuring 0.24 sec.; diastolic periods were much shortened, averaging 1/8 sec.; the R-T interval was normal—namely, 0.32 sec. The T waves in all leads were much flattened and corresponded to the height of the P waves, which showed a deflection amplitude of 3-4 millevolts. There were no signs of dropped beats.

Bath. H. C. NIXON, M.D.

### KNOCK-KNEE AND SCOLIOSIS.

MANY causes are contributory to the deformity of scoliosis, but I cannot recollect having read in any textbook a description of the following sequence. The conditions having been noted recently on several occasions in the course of school medical inspection, a brief description may be of interest.

When told to stand up, a knock-kneed child seldom assumes an erect posture with knees together and heels several inches apart; instead, he places his heels together, keeps one leg straight (perhaps the right), and allows the knee of the left to come to rest in front of it. The left leg of necessity remains flexed, and as artificial shortening results scoliosis of a postural nature must follow. Constant repetition of the faulty attitude, aided by the muscular and other defects resulting from the rickets which caused the knock-knee, will soon make the deformity permanent.

It is important to remember this point in the etiology of lateral curvature, for the most painstaking remedial measures will hardly be successful if it is ignored.

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Assistant Medical Officer of Health,
County of Lindsey.

Louth, Lincs.

### DISCHARGE OF ASCARIS LUMBRICOIDES THROUGH A HERNIOTOMY WOUND.

A NATIVE of Nigeria, said to be 79 years of age, was admitted to the Colonial Hospital, Lagos, in October, 1922, suffering from a strangulated inguinal hernia on the right side.

I operated immediately and reduced a loop of small intestine, 6 inches in length from the hernial sac; this intestine was deeply congested but had nowhere obviously lost its vitality, although it was evident that in a very short time it would have become gangrenous. The operation was completed in the usual way.

The old man recovered well, but on the fourth day complained of some "tightness" in his wound; the removal of the dressing disclosed a small swelling in the region of the wound without redness or pain; no fluctuation could be elicited, but the "feel" of the swelling was peculiar and unusual. A pair of dressing forceps was inserted through the healthy-looking incision; the expected discharge not having appeared, the opening was enlarged, a finger introduced, and three full-sized *Ascaris lumbricoides* pulled out. These worms had been lying between the skin and muscle; no communication could be found with peritoneal cavity or bowel, and there was only a trace of sero-sanguineous fluid in the pocket in which the worms lay. The general condition of the patient was quite unaltered by this local occurrence. Santonin was now administered, and many more ascarides were passed by the anus. The wound healed quickly without further complication. Six weeks later the patient, who had been kept in hospital on account of his debilitated condition, contracted pneumonia and died.

At the *post-mortem* examination the ileum was found to be attached to the peritoneal aspect of the herniotomy scar by a single fine adhesion, otherwise the bowel was normal and the peritoneal cavity intact.

The strangulated bowel, after reduction, had become adherent to the under surface of the wound, and at this point the worms had forced their way through what must have been a damaged and softened area of the bowel wall; the interesting point is that they should have done so without causing an infection of the peritoneal cavity or of the wound. This is, I should imagine, a rare complication of strangulated hernia.

QUINTIN STEWART, F.R.C.S.E.,
West African Medical Service.
Nigeria.

## SURGICAL EMPHYSEMA DUE TO PARTURITION.

IN view of the apparent rarity of this condition, I have been prompted by Dr. Harvey's note (June 21st, p. 1089) to record particulars of a precisely similar case that came under my care ten days ago.

A young and healthy primipara, whilst having strong and regular pains, complained that her right eye was becoming swollen. This gradually increased, and the swelling extended all round the neck, upper part of the chest, and down the right arm. It had the typical crackling feeling characteristic of surgical emphysema. The labour was somewhat delayed owing to the presenting part being a face, and it was ultimately terminated with the assistance of forceps.

The emphysematous area was very tender for several days, but the whole condition completely subsided in about a week.

A. W. HANSELL.
Bedale, Yorkshire.

## OEDEMA OF LARYNX PRODUCED BY POTASSIUM IODIDE.

THE following case shows the extraordinary susceptibility of some individuals to potassium iodide. My patient, a female, had only taken some 20 grains, in 5-grain doses, when she complained of a feeling that her throat was closing up. I found marked oedema of the right aryepiglottic fold, but there was no sign of any inflammatory mischief.

On discontinuing the drug, and giving large doses of sodium bicarbonate with a laryngeal spray of 2 per cent. cocaine and 1 in 2,000 adrenaline, the trouble disappeared in twenty-four hours.

G. A. GARRY SIMPSON.
London, W.

## RUPTURE OF AORTIC ANEURYSM IN A YOUNG WOMAN.

A *post-mortem* examination on the body of a woman, aged 29, revealed the following pathological features.

The aorta was ruptured on its posterior wall, inside the pericardium. The vessel walls were thin and atheromatous (opaque white patches in its first part, which on section showed thickening of the tunica intima but no calcareous deposit). A small pale infarction situated in the upper pole of the left kidney. The left ventricle was hypertrophied. There was no history of syphilis.

The age and sex, and also the site of rupture, make this case of sufficient interest to justify record.

R. MACKINNON, M.B., Ch.B.,
Honorary Pathologist, Oldham Royal Infirmary.

## UNCOMMON FORM OF DISLOCATION OF THE PATELLA.

ALTHOUGH dislocations of the patella are common, yet the "vertical" dislocation described below, with complete rotation of the bone, is sufficiently rare to be of interest.

In March last a young Indian soldier (driver in the R.F.A.) was admitted to my wards with a diagnosis of fractured patella. There was a history of his having fallen off his horse about an hour previously. After having been given first aid on the spot, he had been sent to hospital in an ambulance.

I found that the left patella was lying over the anterior surface of the external condyle of the femur, and was completely rotated on its vertical axis so that the posterior aspect now looked forwards and the anterior surface was in contact with the condyle of the femur. Reduction was easily effected by slight pressure on the outer edge of the patella once complete relaxation of the quadriceps extensor muscle had been obtained.

Mild synovitis of the knee-joint resulted, which subsided in about a week. The patient was discharged to duty with a normal knee-joint ten days later.

E. G. KENNEDY, Major I.M.S.
Bangalore, South India.

# Reports of Societies.

## PROCTOLOGY.

### JOINT CLINICAL MEETING IN LONDON.

A VERY successful joint meeting of the Subsection of Proctology of the Royal Society of Medicine and the American Proctologic Society was held on July 9th, 10th, and 11th. The latter society was under the presidency of Dr. RALPH JACKSON (Boston), with Dr. J. F. Montague (New York), the present secretary, and about fourteen other members.

The proceedings were opened on the morning of July 9th, when Mr. ASLETT BALDWIN, President of the Subsection of Proctology, received the American visitors at the Royal Society of Medicine, and, after bidding them a very hearty welcome, outlined the arrangements which had been made for the next few days. Dr. JACKSON replied, and was followed by Dr. WILLIAM M. BEACH (Pittsburg), who read a paper entitled "The evolution of proctology in America." After a consideration of the evolution of specialism in the United States, Dr. Beach described the origin of the American Proctologic Society. He described the peculiar difficulties that were encountered in the early days, owing to rectal practice being then almost entirely in the hands of non-qualified charlatans, and showed how the society was finally successfully launched in 1898, with Dr. Joseph H. Matthews as its first president and himself the first secretary. Since then the society had steadily gone ahead until at the present time its membership was about fifty. The present occasion marked their twenty-fifth anniversary.

#### *Injection Treatment of Haemorrhoids.*

An interesting programme of formal discussions and hospital operation demonstrations had been arranged. The first discussion, on the injection treatment of haemorrhoids, was opened on July 9th by Mr. GRAEME ANDERSON. After giving a history of the injection treatment Mr. Anderson described his present technique, and insisted on the applicability of the method only to uncomplicated cases; his personal preference was for the dilute 10 per cent. carbolic solution rather than for stronger solutions. Dr. CUTHBERT DUKES showed some histological preparations illustrating the intravascular clotting which he had found to take place in the substance of the piles after injection with 10 per cent. carbolic, and the discussion was then continued alternately by English and American speakers. (A paper by Mr. Graeme Anderson and Dr. Dukes, giving an account of their views and experience, is printed in the JOURNAL this week at page 100.) The general opinion was that in selected uncomplicated cases definite improvement could be promised; in some cases permanent cure was effected, but the likelihood of recurrence in perhaps 50 per cent. of cases indicated the necessity for periodical re-examination and further injection as required. The American speakers showed a marked preference for quinine and urea as the injection fluid, and as a rule injected only one pile at a time. Dr. JELKS (Memphis) and Dr. SAPHIR (New York) condemned the method, and described some lamentable after-results that they had seen in the way of haemorrhage and septic complications after injection; no precise details were forthcoming as to the injection fluid used in these cases, and subsequent speakers, including the opener of the discussion, considered that these bad results were due most probably to faulty technique and application of the method to unsuitable cases. The English speakers showed a unanimous preference for carbolic in 10 to 20 per cent. solution in water and glycerin. The immediate arrest of bleeding after even the first injection was agreed upon.

#### *Pruritus Ani.*

On Thursday, July 10th, a discussion on the treatment of rectal prolapse was opened by Dr. HIRSCHMANN (Detroit), with a description of his method of fixing the colon by an abdominal operation. Dr. MONTAGUE (New York) gave a most interesting and beautifully worked out cinematograph demonstration on pruritus ani; he showed in this film the various histological changes which he had noticed in the perianal skin, leading finally

to a sclerosis of the connective tissues of the corium, and a cellular infiltration in the papillae round the end-bulbs of Meissner. In considering the treatment, he described the undercutting operation which he has devised as a modification of those of Sir Charles Ball, Lynch, and others; he performs this operation under local anaesthesia, and undermines the perianal skin and mucous membrane of the anal canal through eight separate incisions. He demonstrated the special thin-bladed scissors which he has devised for this operation. Dr. Montague also gave a diagrammatic representation of his conception that anal pruritus might be evidence of visceral disease due to misreference of sensation, and emphasized the necessity for thorough general and local, including sigmoidoscopic, examination in every case of pruritus ani. Sir CHARLES GORDON-WATSON, continuing the discussion, mentioned the relief that in many cases of pruritus ani followed the cauterization of anal papillae; and Dr. DUKES, in confirmation of his statement that these anal papillae were highly sensitive structures, showed some microscopic sections prepared by the gold chloride and osmic acid methods, showing nerve fibres and tactile corpuscles in anal papillae. Time did not allow for the debate on this subject to be completed.

*Operation for Rectal Cancer.*

On Friday, July 11th, an important discussion on the operative treatment of cancer of the rectum was opened by Mr. ERNEST MILES and Mr. J. P. LOCKHART-MUMMERY. Mr. Miles gave a lantern demonstration illustrating the lymphatic spread of rectal carcinoma, and maintained his uncompromising attitude in favour of abdomino-perineal excision in all cases. Mr. Lockhart-Mummery agreed that this was the operation of choice for a growth in the upper third of the rectum, but preferred a perineal excision for growths within reach of the finger for the following reasons: the smaller operation mortality, the applicability of the operation to a greater number of cases, and the satisfactory after-results. He described the perineal operation as he now performs it, and stated that his operation mortality in 153 private and hospital cases was 9 per cent., with 47 per cent. of five-year cases. The discussion was continued by Sir CHARLES GORDON-WATSON, Mr. SWINFORD EDWARDS, and Mr. GREY TURNER, each of whom agreed with Mr. Lockhart-Mummery in limiting the abdomino-perineal excision to high growths. Mr. GREY TURNER urged the need for earlier diagnosis so that, if possible, a colostomy might be avoided, and he demonstrated a specimen of local excision of a small malignant ulcer from a patient who had now been free from recurrence for more than five years. Dr. KIGER (Los Angeles) showed a water-cooled speculum and large electric cauteries with which he had treated several rectal carcinomata by Percy's cold cautery method, with, he claimed, some good results, and Dr. YEOMANS (New York) referred to the need for information regarding the end-results of radiation in the treatment of cancer of the rectum. The American speakers expressed their real appreciation of the operative work that they had seen over here. In winding up the discussion Mr. MILES referred to the importance of the microscopical appearance of the growth in estimating prognosis, the papillary type having a much better prognosis than the highly malignant colloid variety. Mr. LOCKHART-MUMMERY gave it as his opinion that cancer of the rectum in patients under 30 almost invariably recurred rapidly, no matter what operation was done.

Operations were arranged at the Cancer Hospital and at St. Mark's Hospital. At the former Mr. Miles performed two abdomino-perineal excisions of the rectum, and gave demonstrations of specimens illustrating his arguments. At St. Mark's Hospital each member of the full staff—Mr. Lockhart-Mummery, Sir Charles Gordon-Watson, and Mr. Graeme Anderson—performed a perineal excision of the rectum, followed by typical operations for the minor rectal diseases which showed the general technique of the hospital. A visit to the museum of the Royal College of Surgeons was arranged on July 10th, at which Sir Arthur Keith very kindly conducted the visitors round the museum and showed them a large number of specimens of special interest.

A full programme of social events was arranged for the benefit of the American guests and the ladies accompanying them. A reception was held by Mr. and Mrs. Aslett Baldwin, at 6, Manchester Square, on the evening of July 11th, and on the succeeding days a number of private lunch and dinner parties were given, with visits to Ranelagh, Hampton Court, and the river. The proceedings terminated on Friday evening, July 11th, when the members of the Subsection of Proctology entertained their American confreres at their annual dinner, held at the Langham Hotel. The successful organization of the joint meeting was due to the work of Mr. Cecil Rowntree, secretary of the Subsection of Proctology.

## LETHAL DOSES OF X RAYS AND RADIUM FOR TUMOURS.

AT a conjoint meeting of the Section of Electro-therapeutics of the Royal Society of Medicine with the Röntgen Society, held at Oxford on July 5th, Professor SIDNEY RUSS read a paper on experimental studies upon the lethal doses of radium and $x$ rays for human and other tumours. The chief experimental points of this paper may be summarized as follows:

Professor Russ defined the normal lethal dose of $x$ rays for animal tumours as that dose which it is necessary to give the tumour outside the body, so that when it is inoculated into susceptible animals it fails to grow. A dose less than this slows up the rate of growth of the tumour, and in fact gives a reduced percentage of successful inoculations compared with non-irradiated tumour. It was found that, if a certain time of exposure to $x$ rays produced 50 per cent. reduction in tumour growth, this time had to be increased about 33 per cent. in order to be lethal. Tumours irradiated to a less extent than was needed for lethal action acquired a resistance to the rays which became very pronounced in the course of repeated irradiation; evidence was given of a strain of tumours which had had repeated exposures, requiring 2.5 times the ordinary exposure to $x$ rays before a lethal action was obtained. A comparison was given between the dose of $x$ rays required for lethal action on a tumour and for producing definite reactions of the skin of the rat bearing the tumour; these data showed that a lethal dose for the tumour was a dose which could not with impunity be given to the skin. The exact ratio of these doses could not be given without reference to the wave-lengths of the $x$ rays, because it had previously been shown that both the skin of the rat and the tumour in these experiments reacted differently to identical amounts of energy if this energy were given as rays of different wave-lengths. Under many conditions of $x$-ray therapy, the skin got more intense irradiation than the tumour beneath it (avoided by cross-fire to some extent) and the facts summarized above made it very doubtful if, under therapeutic conditions, a lethal dose was at all frequently given to the tumour irradiated. If this were the case, it pointed to the part which the tissue reactions of the host played after irradiation, and here knowledge was rather scanty. Experiments, supplementary to those carried out some years ago, were made by which it was shown that the resistance of rats to tumour growth is enhanced by giving the animals repeated small doses of $x$ rays. This was in contrast to the lowering of their resistance which followed the administration of large doses. Experiments were made upon the lethal doses of the gamma rays from radium. Tubes containing from 1 to 90 mg. of radium bromide were introduced into tumours, and after remaining in position for periods of 1 to 17 days they were cut down on, and portions of tumour at a distance from the centre of the tube removed and inoculated into susceptible animals. In this way the lethal ranges of radium tubes such as were frequently used clinically had been determined. The lethal action did not strictly follow the intensity curve of radiation, but this was hardly surprising, as there must come a time when the effective dose of radiation was no longer represented by such a simple function as the product of the intensity and the times of exposure.

Reference was made by Professor Russ to certain facts acquired as a result of an immunity operation which had been carried out upon a number of patients. This consisted in the irradiation by $x$ rays of tumour removed surgically and then reintroduced into the body. This had

been done in a wide variety of malignant growths, and it was found that, wherever these tumours had been given twice the lethal dose which was effective for animal tumours they failed to grow. The factor of two had been decided on as a measure of safety, but it was quite likely that less radiation might have been given with the same result. It did, however, set an upper limit to what was necessary for the purpose. There was little doubt that the vulnerability of cells varied according to the phase of their life-cycle, and it had been shown by other observers that, in the actual dividing stage, some cells were especially vulnerable. Attempts had been made to model radiotherapy on these lines so that advantage might be taken of this fact. Professor Russ then analysed the factors entering into the problem. He concluded that certain experimental quantities were not yet available whereby anything like a rigid specification could at present be made as to the best method of combining intensity of radiation and time of exposure for the many varieties of tumours met with clinically.

# Reviews.

## JOHN HUNTER'S CHILDREN.

IF some two centuries ago a eugenically minded philosopher had passed by the farm of Long Calderwood and noted how amply John Hunter (senior) and Agnes Paul had filled their quiver—John (junior), tenth and last, appeared in 1728—he would have drawn the very natural conclusion that the name and blood of Hunter had an assured future. When we turn to the memoir of the Hunters,[1] on which its author, Dr. GEORGE C. PEACHEY, has spent many years of painstaking research, we find that the Long Calderwood family has, in point of numbers and after two centuries of endeavour, done little more than hold its own. The ten Long Calderwood children are represented by fourteen living individuals, all of whom come through Matthew Baillie, the grandson of John Hunter (senior). Matthew's granddaughter, Miss Hunter Baillie, the present owner of Long Calderwood, we are glad to know, is still alive, and Dr. Peachey makes acknowledgement of the free manner in which she has placed her treasury of documents at his disposal. Miss Hunter Baillie is great-grandniece of the celebrated John Hunter, and has a remarkable resemblance to him in body and in mind—facts which would be difficult to explain if Mendel's laws did not hold true in the breeding of human types. The other thirteen survivors of the Long Calderwood family are represented by the children and grandchildren of Miss Hunter Baillie's two sisters, Henrietta and Agnes.

Dr. Peachey's researches throw a new light on the hard fate which dogged the children born in Jermyn Street, London, to John Hunter and Anne Home, who were married at St. James's, Piccadilly, on July 22nd, 1771. "The marriage," says Dr. Peachey, "had probably been postponed in consequence of the disease (syphilis) which Hunter had inadvertently communicated to himself in May, 1767, the complete cure of which, he says, occupied three years." It can hardly be said that "inadvertently" is the right adverb to use here; John Hunter inoculated himself designedly to prove a certain thesis, and by a strange chance the virus he selected was from a case which we now know must have been one of mixed infection.

At the date of marriage Anne Home was 29 and John Hunter 43. Within twelve months a son was born to them—John Banks Hunter—whose career Dr. Peachey has followed at St. John's College, Cambridge, and in the army, by records preserved in the War Office. In the *London Gazette*, April 24th, 1810, Dr. Peachey found the following announcement:

"103 Regt. Major Hunter retires in favour of Capt. E. J. McGregor Murray, promoted Major from 52nd Foot, by purchase."

Why Major Hunter sold out we do not know, but it was for a reason which brought pain to his devoted mother, who wrote, "before I became acquainted with the situation of my poor unhappy son." In his youth she had doted on her son. Her portrait, which Dr. Peachey reproduces, shows her to have been a strikingly handsome woman, with the air and dress of a lady of fashion and of leading; she was a poetess of standing; she wrote birthday odes to her son; when she published her volume of poems in 1802 she dedicated it to "John Banks Hunter, Esq., Captain in the 2nd Batt. of Royals, stationed at Gibraltar." By 1810 this son had done something which turned his mother's flaxen locks to grey. He hid himself in the South of France, where he died in 1838 at the age of 66, leaving no issue.

Such was the fate of John Hunter's eldest son; we now turn to his other children. Eighteen months after the first child was born there came Mary Ann, "a weakly child," who died in her third year; then followed "a fine boy," James, who died a few months after birth. Fourth and last, on January 9th, 1776, came Agnes Margaretta, who, starting away under the happiest of auspices, had a troublous and ill-starred journey through life. Dr. Peachey introduces his readers to her two husbands. In 1794, six months after her father's death and when she was still in her teens, the accomplished young Agnes Hunter married James Campbell, who in due time became Governor of the Ionian Islands; for his services he was knighted in 1817, whereby Agnes Hunter became Lady Campbell. If this marriage brought her a title, it brought happiness neither to her nor to her elderly husband; for Dr. Peachey finds that in a codicil to his will, made in 1813, her husband describes her as "an ungrateful and unprincipled woman." In 1819 Sir James Campbell, having been made a baronet, died, and was buried in Westminster Abbey. Two years later his widow married Lieut.-Colonel Benjamin Charlewood of the Grenadier Guards, and brother of the Duchess of Roxburghe. Mrs. Matthew Baillie has recorded in her diary "that the devotion of Colonel Charlewood made amends to Lady Campbell for the unkindness of her first husband." She died childless in 1838 at Brighton—a few months before her brother passed away at Toulouse. Thus in 1838 the progeny of two rarely gifted parents, John Hunter and Agnes Home, came to an abrupt end with the first generation.

We have picked from Dr. Peachey's memoir only a few details to illustrate the interesting nature of its contents. Although Dr. Peachey may not have succeeded in painting a living picture of the two Hunters, nor in giving his readers a reason for their greatness, yet he has produced a work which no student of our medical history can afford to neglect, and which will prove of infinite service to Hunterian Orators of future generations.

[1] *A Memoir of William and John Hunter.* By George C. Peachey. Plymouth: William Brendon and Son, Ltd. (Printed for the Author.) 1924. (Demy 8vo, pp. viii + 313; 8 plates. 21s.)

## MEDICAL HISTORY OF THE WAR.

WE do not know whether it be the intention of the historical section of the Committee of Imperial Defence to cause to be completed a general *Official History of the Great War*,[2] but such undertaking is suggested by the main title of certain volumes relating to the doings of the medical profession during the period. The preparation and publication of these medical volumes were authorized at an early date, and most of the volumes then in view, twelve in number, have already appeared. Eight of them relate to the strictly professional aspects of the work of the medical services in the great war, and four to those of a more essentially military character. To the second of the latter attention was drawn in this JOURNAL as recently as last February by two extensive notices, and a third volume has since been published.

Like its predecessors, its contents, so far as their final wording is concerned, are exclusively the work of Sir WILLIAM MACPHERSON, but the preface indicates that, as in the case of the two earlier volumes, certain parts are in the nature of an abstract of accounts supplied by some officer who in each case took a leading part in the events described.

The present volume covers very wide ground, since its precise subjects are the events in France from the end of the year 1915 to the end of the war; the operations on the Italian Front, including the arrangement and working of

[2] *History of the Great War based on Official Documents.* Medical Services: General History. Vol. iii. By Major-General Sir William G. Macpherson, K.C.M.G., C.B., LL.D. London: H.M. Stationery Office. 1924. (Demy 8vo, pp. viii+556; illustrated. £1 1s. net.)

the long Taranto-Cherbourg evacuation route from the Middle East; the occurrences in Egypt during the progress of the fighting on the Gallipoli Peninsula, for which Egypt was the base, and subsequent events down to the time when demobilization began; the operations on the western frontier of Egypt against the Senussi, and deep in the Sudan, far below Khartoum, against the Sultan of Darfur; the work involved in the Sinai Peninsula; and, finally, the events in the Palestine campaign.

As the whole text consists of less than six hundred pages, parts of which are often occupied by photographs and sketch maps, it will at once be clear that the accounts supplied of the long list of subjects that have just been mentioned must be very compressed. The reason appears to be that limitations of time and space were imposed on the author, and that consequently all he has attempted is "to provide a basis on which those desirous of studying more closely the medical situation during the various battles and phases of the war may be able to reconstruct with the aid of the maps the chief features of the work of the medical services."

This being the case it seems right, on the whole, to refrain from anything in the nature of a deliberately critical review or an attempt to assess the degree of success attained. It will suffice to say that throughout the volume the writing, while always conspicuously clear, varies a good deal both in quality and kind. In some of the accounts it is of narrative type, the writer giving relatively few facts, but bringing into strong relief details which he presumably considers of special importance. In others the reader is not infrequently faced by a formidable array of facts which he must more or less collate for himself; naturally, the pages of this type form somewhat hard reading, but they are by no means the least interesting, and are perhaps most likely to repay close study by those the author has been chiefly anxious to assist.

Naturally it is the operations in France that receive the lion's share of attention, but, curiously enough, very little is said as to work at the bases or on the lines of communication, and we find no reference to the tutorial work in new methods of wound and fracture treatment which was thought desirable late in 1917, though initiated earlier, and which was so admirably carried out in a forward casualty clearing station of the First Army almost up to the moment when the Germans swept over the original British front line. On the other hand, throughout the whole volume the work of forward units receives a considerable amount of attention, and in this connexion may be mentioned a report by Colonel J. Poe on the medical work of his Division during the advance towards the Hindenburg line, which the author wisely quotes in full. So far as the strictly military work of medical men during active operations is concerned, it is by far the most illuminating statement we have anywhere yet read.

Sundry passages in the volume make it clear that there was a tendency, at all events in France, for the Directors of Medical Services of armies to approve of departures from the strict teaching of the R.A.M.C. *Manual* in regard to the respective uses of casualty clearing stations, advanced dressing stations, and main dressing stations, the latter being not infrequently relegated into the background. The author seems to think that this was usually, if not always, a mistake, but the impression left by the volume as a whole is that the elasticity of mind shown in this connexion by those in medical charge of corps and armies was rather a happy circumstance.

Since casualty clearing stations must always be the hinge of the whole evacuation arrangements of an army, and as undoubtedly in the late war it was the type of unit on which mainly depended the great success of the professional work of the medical services, it is satisfactory to note that the doings of these units receive very full attention throughout the volume. Yet despite this circumstance its students will probably remain in some doubt as to the lesson the war taught as to the extent of the casualty clearing station accommodation necessary. In other words, we do not get a clear answer to the question: For what percentage of the total force of which he is in medical charge should a cautious Director of Medical Services endeavour to secure casualty clearing station accommodation when an offensive is about to be launched? This must always be a point of extreme interest, and the volume shows it to be one on which there was difference of opinion between two such experts as the D.D.G.M.S. and the D.M.S. of one of the armies just after the beginning of a series of very important operations. The D.M.S. wanted to increase his casualty clearing station accommodation by getting more marquees than had been allotted to him, but the D.D.G. did not think this was necessary. It is clear that the author holds the desire of the D.M.S. to have been justified, but the facts supplied do not enable the reader to judge whether he would share this opinion if fully informed.

In this connexion it may be said that commanding officers, either of medical units or of a collection thereof, who when active operations are in view are ready to express themselves content with the extent of their allotted equipment and personnel, and never ask for more than they know themselves positively to need, were in the late war somewhat rare, and a D.M.S. is the last person who can well be blamed for pressing claims in this relation. How fatal may be an opposite attitude on the part of such an officer was shown by earlier wars, and in at least one campaign of the late war.

The extent of casualty clearing station accommodation desirable must in particular be peculiarly difficult to compute. Modern battles tend to last weeks rather than days, and subsequently it may easily be shown that in the course of a given number of days the casualties reaching a group of casualty clearing stations were a long way within the number it could have successfully handled, or that had been successfully handled by other groups on other occasions. But this does not prove that the accommodation was in fact excessive; on any one day, indeed, it may have been far below immediate needs. Flooding due to an unexpected degree of success in the work either of regimental stretcher-bearers or of field ambulance units or of both, and blockage due to a temporary breakdown on the evacuation line, are both difficulties to which casualty clearing stations are liable.

In addition the medical and the military forecasting of casualties are not identical or even commensurate tasks. The commander of an army may conceivably estimate correctly to three points of decimals the total man-cost of any operation he has in view, but how much of this man-cost will represent casualties from the point of view of his D.M.S., as also the rate they may be thrown on the latter's hands, are quite different questions. The variable factors include, for instance, the proportion of killed and missing to total losses, the proportion of walking cases to severely wounded, the number of attack waves successful in reaching their objective, the distance of the latter, the state of the weather and of forward evacuation roads, the activity of the enemy in shelling back areas, and the success or otherwise of the arrangements for collecting the wounded and passing them to the rear.

Other debatable points of much interest in connexion with casualty clearing station work are the right degree of the proximity of these units to the front line, and the extent to which a D.M.S. should provide for the contingency of a successful action by the enemy. In both these relations the D.M.S. already referred to is definitely blamed by the author. It is possible, of course, that the D.M.S. was disposed to take too many risks, but it cannot be said that the facts mentioned in support of either condemnation are really convincing. The group of casualty clearing stations whose position the author holds to have been wrong certainly came under shell fire one day about three weeks after the opening of the operations already mentioned, and might have done so much earlier. But meanwhile, in those same three weeks, several groups at a considerably greater distance from the line, and whose sites were never in dispute, had suffered much more severely from enemy action in the shape of bombing, and a third-line casualty clearing station of a neighbouring army had been shelled out of its position though situated approximately twenty miles from the nearest enemy trenches. In fact, the beginning of the British offensive in question was also the beginning of the time when medical units in general began to suffer from enemy action, and in some cases, though situated far outside army areas, seem to have been intentionally attacked.

In the earlier stages of the war anything of the kind had been very rare, and it was then that the principal medical officers of armies, with the laudable intention of meeting as far as possible the professional needs of the service, got into the habit of pushing up their casualty clearing stations closer towards field ambulance areas than was perhaps militarily desirable. Among other things these units were much larger and infinitely more complex in their organization than had been designed by pre-war regulations. Obviously, also, closeness to the front may spell undesirable proximity to legitimate objects of enemy attack—such, for instance, as ammunition dumps—though this does not necessarily follow.

As regards inadequate preparation for a possible defeat, the D.M.S. in question was somewhat unfortunately situated when the occurrences on which the author dwells took place, and when the enemy captured a good deal of casualty clearing station equipment, but not whole units, including many patients and much personnel, as was the case later on in another command elsewhere. This part of the line that his army occupied had only recently been taken over from the French, and consequently—unlike the case of the other armies still occupying old-established parts of the British front—there were in its rear no already allotted and organized sites to which he could immediately send his casualty clearing stations when the push back commenced. In addition he had been assigned an office at a relatively immense distance from his front, and he was attached to an army commander who, though he certainly had prepared second and third lines of defence, did so on what proved to be an inadequate scale, and who probably would have laughed at the idea of his being driven back a distance of about forty miles in the course of a few days. Indeed, the vastness of the success of the German offensive beginning in March, 1918, was not anticipated by anybody either in France or elsewhere. Towns and villages which for years had been regarded as not much more dangerous places of residence than London itself were practically in a moment either swept out of existence altogether or brought within the reach of continuous light artillery fire; while others at a somewhat greater distance were subjected to constant bombing attacks and heavy gun shelling.

Readers should not overlook the account of the work of the medical services during the final advance, as, apart from its intrinsic interest and the fact that the operations described led to as many as 250 casualties among medical officers, and to 1,920 among other ranks of the medical service, the style of the work then done conformed perhaps more closely to pre-war anticipations of field operations than at any other period in France, with the possible exception of advance towards the Hindenburg line. By way of contrast the equally interesting record of the small but exceedingly trying operations against the Sultan of Darfur should also be studied.

In the narrative of the work in Egypt those who late in the year 1917 were disposed to claim that the Medical Department did not always employ its commissioned personnel to the best advantage are likely to note with interest that three medical officers of field rank were successively employed at Alexandria in the conduct of a splint factory. It is true that one of them had as a civilian long been known for his ability in the matter of devising splints, but he was also so expert a surgeon that his employment in the fashion stated may well be deemed rather a waste of good material.

The sketch maps freely provided throughout the volume are admirable, but, of course, they usually show not true but crow-fly distances in respect of the position of medical units. There are also a large number of excellent photographs, but conceivably some of these may be rather deceptive to future students, inasmuch as the date at which they were taken is not always indicated. It is also the case that the moments at which the habitats of front-line formations are in their most truly typical condition are rarely available for photographic purposes.

In giving the foregoing account of the contents of the volume it has been thought right to dissent from some of the opinions of the author, but this, it need scarcely be said, in no wise implies any dissent from the admiration expressed in the notices of the earlier volumes for the great ability brought to bear by Sir William Macpherson on a task of immense difficulty.

## THE VEGETATIVE NERVOUS SYSTEM.

THE second edition[3] of Professor MÜLLER'S work on the vegetative nervous system is a textbook of a high order of merit. It has been written in collaboration with many other authors, mostly from the Erlangen school, and is a mine of information on the anatomy, physiology, and disorders of the involuntary nervous system. It is a fairly complete exposition of the whole subject, though anatomy and physiology receive more attention than other subjects.

The earlier chapters comprise an account of the general anatomy, physiology, and histology of the sympathetic and parasympathetic systems. Profusely illustrated by plates and figures, many of them coloured, this section provides a detailed description which it would be hard to better. Then follow chapers dealing specifically with the innervation of the various organs and glands, and with many of the disorders of function to be observed clinically. The innervation of the heart, of the blood vessels, and of the bronchi is fully described and illustrated, and under the title of functional nervous disturbances of the heart is included an account of electrocardiography and of polygraph methods of examination.

The chapter on the influence of the vegetative nervous system on the skin is useful and informing, and will appeal to the clinician; it has a valuable series of illustrations.

The book can hardly be regarded as one for the student; it is rather a work of reference for the neurologist and physician, both of whom may find here under one cover much for which search might have to be made through many volumes. The type is good and the illustrations deserve especial praise; the coloured plates and the microphotographs are admirable and the anatomical diagrams are clear and helpful.

## THE LABORATORY DIAGNOSIS OF SYPHILIS.

A PERUSAL of NOGUCHI'S *Laboratory Diagnosis of Syphilis*[4] fills the reader with admiration for the author's energy and industry, but raises inevitably some doubt as to whether he is quite serious when he describes his book as "a manual for students and physicians."

Approximately the first half of the book deals with serum diagnosis; a lucid account is given of haemolysis, which is explained as due to the interaction of amboceptor and complement; their respective actions are well shown in Figs. 2, 3, and 4. The nature of complement—a matter about which there is so much uncertainty—is unfortunately almost neglected. In the third chapter, which deals with antigens and antibodies, the mechanism of the fixation of complement is discussed, and the Bordet-Gengou phenomenon, on which the theory of the Wassermann test depends, is illustrated by two diagrams. This leads us on to an account of the application of complement fixation to the test for syphilis. Many of the methods of different writers are detailed, but this is a matter largely of historical interest.

After dealing with inactivation of serums, about which many interesting experiments are related, the author describes his own method. The source of complement, and a number of useful ways of preserving it, are given; a notable omission is the simple method of freezing it solid. The author uses a fixed amount—0.1 c.cm. of a 40 per cent. dilution—and does not vary it according to titration, as many serologists do. No doubt he has his own good reasons, but the plan is risky, for some complements are much inferior in titre to others, and this is notably the case when working in tropical countries.

The section devoted to antigen is comprehensive and irreproachable. Noguchi, as is well known, favours the

[3] *Die Lebensnerven.* Dargestellt von Dr. L. R. Müller. Zweite Auflage. Berlin: J. Springer. 1924. (Sup. roy. 8vo, pp. xi + 614; 352 figures, 4 plates. 8.35 dols.; bound, 8.70 dols.)

[4] *Laboratory Diagnosis of Syphilis.* A Manual for Students and Physicians. By Hideyo Noguchi, M.D., M.S., Ph.D., D.Sc. London: Humphrey Milford, Oxford University Press. 1923. (Demy 8vo, pp. xiii + 392; 59 illustrations, of which 13 are in colour. 36s. net.)

acetone-insoluble extract, and this no doubt gives the most reliable results, but it is a question whether greater delicacy is not obtained by using a simple alcoholic extract reinforced with cholesterin, as recommended by McIntosh and Fildes. The risk of "false positives" is alleged against this, but the event is so rare as to be negligible.

For his haemolytic system Noguchi favours human red cells (and the corresponding amboceptor). No doubt this has many advantages, but evidently Noguchi has been more skilful or more fortunate than many, who find it very difficult to obtain an amboceptor of good titre by injecting a rabbit with human red cells. Many of the animals die prematurely, and when they survive often a titre of 1 in 500 is not reached. The diagnostic value of the serum test is discussed in Chapter XI. The tables given would be more valuable if, for example, in computing the number of primary cases yielding a positive reaction, the age of the disease were stated; it is well known that primary syphilis will usually give a negative reaction in the first week, but that most cases give a positive after two or three weeks.

The discussion of the effect of treatment on the reaction is neither up to date nor up to the standard of the rest of the book. In order to appraise the value of treatment it is necessary to know the stage at which it was commenced, the actual amount of each drug given, and the length of time occupied in giving it. These facts are frequently omitted. In dealing with specific complement fixation Noguchi writes with undeniable authority, since it was he who successfully cultivated the *Spironema pallidum* in 1910-11. A detailed account of his technique for cultivating the spironeme would have been an interesting and useful addition.

Passing from the serum test, the author describes the luetin or cutaneous reaction, and here he is perhaps at his best. The description is full and clear, and the coloured plates beautifully reproduced. The reaction has been somewhat neglected in England, and a study of this part of the book is strongly recommended to all syphilologists.

In a chapter devoted to the cerebro-spinal fluid the author rather stresses the test for globulin, which, after all, is not diagnostic, since it is given in other diseases. The Nonne-Apelt and Pandy tests are simple and reliable, and sufficient for all diagnostic purposes. The description of Lange's gold test is good, but might well have been rather fuller, since many encounter difficulties in carrying it out. Some account of other colloidal tests, such as the mastic and benzoin, might with advantage have been included.

The section on the detection of spirochaetes is extremely good, though it may be noted that the name "treponema" is retained in contradistinction to "spironema," which appears to be more correct. The description and figures of *Spironema pallidum* and allied organisms are all that could be desired, and the dark-ground method is given the prominence it deserves. This is the best method for diagnostic purposes—it is so easily and so quickly carried out once the technique is mastered—but it presents many pitfalls to the uninitiated. The pages devoted to staining methods are largely of historical interest, for no one nowadays would attempt to make a fixed preparation for diagnosis if the dark-ground method were available; with the staining method such valuable characteristics as motility and regularity of spirals, which are so typical of *S. pallidum*, are missed. One point in the differential diagnosis of spirochaetes seems to have been overlooked—namely, that *S. pallidum*, though very active, shows little or no movement of translation.

The book concludes with a bibliography of about 600 references, and a very valuable list of definitions of terms used in immunology—such as agglutinins, amboceptor, complement, sensitization, etc. To sum up, it may be said that Noguchi has given as clear and comprehensive an account of all a worker is likely to require for the laboratory diagnosis of syphilis as is to be found in any one book. The volume of work on which the book is founded must be stupendous. Few syphilologists will fail to add to their knowledge by a study of the book, and all will be interested. If the author seems dogmatic at times, he has at least a great reputation and a vast accumulation of knowledge to support him.

## NOTES ON BOOKS.

THE *Guide Pratique d'Analyses de Chimie Biologique*, by Dr. RENÉ CLOGNE, of which a second edition[5] appears after three years, is pre-eminently a book for the bench. It may be wondered, therefore, whether its paper cover and its general format are the best calculated to recommend it to those to whom it is so obviously addressed. It would not appear to be that hardy sort of book which alone survives the maltreatment of a chemical laboratory. Its scope is very wide, and on this account alone it should be useful to many by enabling them to effect a casual analysis of an unusual nature without laborious search in an uncritical literature. Apart from descriptions of analytic methods for the determination of all the usual physiological and pathological constituents of blood, urine, faeces, and secretions in general, there is a chapter devoted to the analysis of water and another to the detection of drugs in the urine. The somewhat original plan has been followed of arranging the material in the alphabetical order of the substances examined. This seems to have some merit in a book intentionally designed as a handbook. The methods recommended are in general the familiar ones. Descriptions are clear, though condensed to the minimum of words, and no attempt is made to give warning of the many "snags" which attend the use of unfamiliar methods. The price should recommend the book to many who would not otherwise be attracted by its exterior.

A recent addition to the many publications relating to *Urine Examination* is a manual[6] on this subject by Mr. FLORIN J. AMRHEIN, an assistant professor of chemistry at a school of pharmacy in Boston, U.S.A. It is intended for the benefit of students of nursing and pharmacy, but, as is often the case in American publications having analogous aims, it deals with its subject much more fully than might be expected in the circumstances. The volume, in fact, supplies quite as much information as practitioners usually require, and the habitual clearness of the description of methods is only occasionally marred by the use of laboratory slang.

The little book on *Impotency, Sterility, and Artificial Impregnation*, by Dr. FRANK P. DAVIS, which has now reached its second edition,[7] contains a fairly full account of the causes, symptoms, and treatment of impotency and sterility, including two interesting chapters on the relation of the sense of smell to the sexual function. The author is convinced that the majority of cases of failing sexual power are due to psychic causes and can be relieved by bringing the patient into the proper environment, together with suitable treatment. The chapter on artificial impregnation gives a brief historical account of the practice and describes the author's method. The least satisfactory part of the work are the two chapters devoted to drug treatment. We have noted an unduly large number of misprints.

The issue for July of *Medical Science, Abstracts, and Reviews*[8] contains, in addition to abstracts classified under systematic headings, special articles on certain periodicals. Those so treated in recent issues have been *Heart*, *Journal of Experimental Medicine*, *British Journal of Experimental Pathology*, the *Journal of Pathology and Bacteriology*, the *Annales de L'Institut Pasteur*, and the *Beiträge zur pathologischen Anatomie und zur allgemeinen Pathologie*. Most issues contain also reviews on some particular subject; thus in the April issue is such a review on the histopathology of epidemic encephalitis, and in the July issue a review on blastomycotic infection of the nervous system.

It may be doubted if in these studious days medical men share social occupations as largely as sundry lay writers would seem to think, but there must be some at any rate who play bridge with more or less regularity. These may be glad to know that "Bascule's" book on *Advanced Auction Bridge*,[9] for some time out of print, has now been reissued. Its reappearance was delayed by the apparent imminence of a form of the game which would have put the auction variety out of court, but this anticipation has been falsified. The rules adopted by the Portland Club in January this year are set out and the statements in general brought up to date.

[5] *Guide Pratique d'Analyses de Chimie Biologique*. Par René Clogne. Préface de M. C. Prof. agrégé J. Castaigne. Deuxième édition. Paris: Librairie le François. 1924. (Imp. 16mo, pp. 282; 36 figures. Fr. 14.)

[6] *A Manual of Urine Examination for Students of Pharmacy and Nursing*. By Florin J. Amrhein. Philadelphia and London: W. B. Saunders Company. (Cr. 8vo, pp. 201. 10s. net.)

[7] *Impotency, Sterility, and Artificial Impregnation*. By Frank P. Davis, Ph.B., M.D. Second edition, revised and enlarged. London: Henry Kimpton. 1923. (Post 8vo, pp. 168. 9s. net.)

[8] Oxford University Press. Price 3s. a month; 30s. a year.

[9] *Advanced Auction Bridge*. By "Bascule." London: Longmans, Green and Co. 1924. (Cr. 8vo, pp. 271. Price 7s. 6d. net.)

# Vetera et Nova.

## PRESENT-DAY TEACHINGS ON HELMINTHOLOGY IN RELATION TO PUBLIC HEALTH.*

BY

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THE intense activity with which research has been pursued during recent years has resulted in knowledge which, if properly applied, ought to ensure the control and eventual eradication of the infestations of man with parasitic worms.

To be in a position to utilize the knowledge we now possess concerning the parasitic worms, the medical officer of health should have some acquaintance with the morphology of the principal helminths of man; their normal habitat and geographical distribution; the manner in which their progeny leave the body; the method of collecting samples and the means by which the various species can be identified from microscopical characters of the eggs and embryos; the after-history of these eggs or embryos outside the body; the intermediate hosts which, in certain cases, are essential; the exact part that these intermediate hosts play in procuring the re-entry of the parasite into the human body; the particular route of entry of the infective stage; the local reactions set up by the invading form at the seat of entry and in its course of migration through the body previous to attaining its normal habitat as an adult; and finally the value of the various anthelmintics in the treatment, not so much of those suffering from helminth disease, as of those healthy persons with slight infections who act as carriers and disseminators.

On these questions the medical officer of health is as a rule lamentably ignorant. The reason is not far to seek, for our textbooks on hygiene, written by recognized authorities and designed for the use of candidates for the Diploma of Public Health, not merely deal with the subject in a perfunctory and disjointed manner, but contain statements that are grossly inaccurate and frequently incomprehensible. In none does one find any attempt to expound the general principles governing the control of entozoal infestations.

### *Textbook Teachings.*

The recent decisions of the General Medical Council give the subject of Parasitology a place of much enhanced importance in the curricula for Public Health diplomas. This makes it a public duty to call attention to the present unsatisfactory exposition of the subject by the recognized teachers and authorities in public health; this defect cannot better be illustrated than by a series of extracts taken verbatim from the most recent editions of such standard works as those of Parkes and Kenwood, 1923; Notter and Firth, 1921; and Whitelegge and Newman, 1917. All these authors claim to have thoroughly revised the edition and brought it up to date. It will be seen from the extracts that the nomenclature used is antiquated and inconsistent, that the morphology is vague and has no relation to classification, that the life-histories are inaccurate and confused, and that the methods of prevention based thereon are futile.

Of the common *Ascaris lumbricoides* it is stated:

"The ova of the females are discharged with the faeces of the host, and then they become capable of furnishing embryos, a power not hitherto possessed. The embryos probably have an independent existence (possibly in water or in some intermediate host—such as worms or insects) before again entering the human body, . . ."—Parkes and Kenwood, 1923.

"The common roundworm, or *Ascaris lumbricoides*, is very like an ordinary earthworm; . . . How and where the eggs develop is not known, but it is supposed to be in some intermediate host, possibly an aquatic host; it is chiefly through water that they appear to reach man."—Notter and Firth, 1921.

Apart from size there is little similarity between the common roundworm and the earthworm. In structure they differ completely. The development of the eggs of *Ascaris lumbricoides* outside the body is very fully known and has been minutely studied by many workers. The unsegmented ovum develops into a larva which is retained within the original eggshell. The eggs are thick-shelled and designed to withstand partial drying. Within a month the larva has developed to the infective stage. If the egg is then taken into the body as a contamination of food (this often occurs as a contamination of vegetables manured with human excrement) the larva is released by the digestive juices. Thereafter it pierces the gut wall, passing to the liver, and thence by the blood stream to the heart and lungs. Here the larvae enter the air sacs, causing haemorrhages as they leave the capillaries; they pass up the bronchi and are eventually swallowed. On reaching the intestine for a second time, having developed in their migration, they gradually attain adult form. There is no free stage and no aquatic or other intermediate host is involved. Oxygen and a slight degree of moisture alone are essential. The infection probably occurs from stale faeces and is not water-borne.

"*Ascarides.*—Under this name is included a large family of intestinal parasites. Of those affecting man there are three chief varieties: namely, the lumbricus or roundworm, the threadworm, and a tropical kind called *Trichocephalus dispar*."—Notter and Firth, 1921.

The term "ascarides" is a collective term similar to ankylostomes and has been used, especially by the French, for the family Ascaridae, which is the correct nomenclature for the family. The roundworm *Ascaris lumbricoides*, the threadworm *Oxyuris vermicularis*, and the whipworm *Trichuris trichiura* (*Trichocephalus dispar*) are members of three families—Ascaridae, Oxyuridae, and Trichuridae—which differ from one another fundamentally in morphology.

The whipworm, of all the intestinal worms, has perhaps least claim to be described as a tropical form. Infection is direct and results from the contamination of food with stale faeces or soil contaminated with faeces. The egg is thick-shelled and retains the embryo, which develops slowly and has no free stage.

Concerning the whipworm and hookworm it is affirmed—

"The life-histories of *Trichocephalus dispar* (whipworm) and *Sclerostomum duodenale* (common in Egypt and Brazil) have not yet been definitely ascertained. It is not certain by what vehicle the ova of the females (which develop in man) infect their host, or whether in either case there is an intermediary stage of development of the parasite."—Parkes and Kenwood, 1923.

We are informed that—

"*Anchylostoma duodenale* causes anaemia, internal haemorrhages, etc., and occasions great mortality in Brazil, West Indies, and Egypt, where it is thought to be sometimes due to infected water."—Parkes and Kenwood, 1923.

The following description given of the hookworm is also worth quoting:

"*Anchylostoma.*—This is a short worm, about half an inch long, . . . In the warm damp earth the parasite leads a free existence, and assumes a slightly different shape to that which it presents when in the human bowel; instead of being rather short and stumpy, it is long and thin."—Notter and Firth, 1921.

Although intense infestations do cause death hookworm does its chief harm by lowering the working efficiency of the infected and rendering them more susceptible to intercurrent bacterial infections. The parasite occurs throughout the tropical and subtropical belts extending into Japan and Europe.

The life-history has been more completely investigated than that of any other helminth. It is known, as a result of Looss's researches, that drinking water is an unimportant source of infection and that the vast majority of cases are due to skin invasion.

The adult worms live in the small intestine, where they lay large numbers of eggs. These are not infective but hatch in the faeces some days after they are passed; the larva undergoes its essential metamorphosis in damp contaminated soil. The larva is, of course, microscopical, and the differences between it and the adult can scarcely be dismissed with the statement that it is long and thin rather than short and stumpy. The comparison is meaningless. The preventive measures recommended against hookworm infection appear somewhat harsh, for

"The separation of the diseased from healthy persons is necessary."—Whitelegge and Newman, 1917.

As 90 per cent. of the population in many of our colonial possessions suffer from hookworm infection it

* Based on a paper read at the congress of the Royal Institute of Public Health at Bordeaux, June, 1924.

might be wiser to segregate the healthy, more especially as reinfection is continually taking place from the soil.

The early history of the familiar but now relatively unimportant *Trichina spiralis*, which occupies much valuable space in public health treatises, is regarded for some reason as of especial interest to the reader, who will also be surprised to learn that:

"This parasite has been found in the flesh of many different animals (pigs, pigeons, eels, etc.). . . . The long slender head and blunt tail are two characteristics which serve to distinguish these worms from parasites which otherwise resemble them, such as *Dracunculus* and *Filaria sanguinis hominis*."—Parkes and Kenwood, 1923.

Many different nematodes become encysted in flesh of animals and were many years ago regarded as trichina forms, but it is now known that in most cases these are the larvae of a variety of nematodes which do not inhabit man. The *Trichinella spiralis*, as it is now properly named, occurs in the pig, rat, and man. The adult is a minute form, measuring about 3 mm. long, and inhabiting the crypts and submucosa of the small intestine. It is impossible to compare it with the enormous *Dracunculus*, which measures from two to three feet in length, or the *Filaria bancrofti* larva, which lives only in the blood stream and is a microscopical form. In any case "a long slender head and blunt tail" scarcely conforms with helminthological standards, but as a description it might easily mislead the student into confusion with some bacteria.

Of tropical forms occasionally met with in this country the authors naturally say little. Of the *Dracunculus medinensis* we are simply informed that—

"The embryo guinea-worm, *Filaria dracunculus*, is aquatic and finds its way into the human body through the alimentary canal by means of drinking water, . . ."—Parkes and Kenwood, 1923.

*Dracunculus medinensis* resembles the filaria worms only in habitat, for some of these live in the connective tissues. The worm has long since ceased to be known as *Filaria medinensis*. The combination of two generic names *Filaria dracunculus* is quite unjustifiable.

The larva is aquatic and enters in drinking water, but it does so only within the body of an almost microscopic crustacean of the genus Cyclops, in which it has previously undergone a metamorphosis. The embryo as it leaves the human body is not infective to man.

The transmission of *Filaria bancrofti* is related with equally inaccurate brevity:

The embryos of *Filaria sanguinis hominis* "are sucked from the blood of infected persons by mosquitos and, after developing in the body of that insect, are then transferred to water by means of the larvae."—Parkes and Kenwood, 1923.

The embryos of *Filaria bancrofti* undergo metamorphosis in mosquitos and migrate to the proboscis, whence they return to man during the act of biting by the mosquito; the infecting larva enters the skin around the site of the bite. The supposition that filariasis is water-borne dates from before Low's demonstration of the migrating forms in the proboscis and was the view put forward by Manson when he traced the essential stages of development in the mosquito.

"The parasite is found chiefly in the East and West Indies, but occasionally in England, even among persons who have never left the country."—Whitelegge and Newman, 1917.

This curious distribution cannot be explained on zoological grounds, as *Filaria bancrofti* and its carriers occur in most countries in the tropical and subtropical belts. But regarding its reputed occurrence in England, which is based on a single case recorded from Devon, I may add that I personally examined the original film and pointed out at the time that the filaria "embryos" were contaminations with cotton-wool, an opinion which was accepted at the time by the recorder.

The flukes and tapeworms are not ignored, for we are told that:

The trematodes or flukes "furnish two human parasites, the *Bilharzia haematobia* and the *Distoma hepaticum*," whereas of the Taeniada "It has been said that as many as a dozen forms of tapeworm occur in man."—Whitelegge and Newman, 1917.

There are of course a considerable number of common and important flukes in man: notably *Clonorchis sinensis*, *Fasciolopsis buskii*, *Heterophyes heterophyes*, *Metagonimus ovatus*, *Paragonimus ringeri*, and *Gastrodiscoides hominis*, all of which are much more prevalent in man than *Fasciola hepatica*, which is only an accidental form.

The important tapeworms are *Taenia saginata*, *Taenia solium*, *Dibothriocephalus latus*, *Hymenolepis nana*, and the larval stage of the *Taenia echinococcus* of the dog. The other records are of scientific interest only. We are told that:

"The life histories of *Taenia mediocanellata* and *Bothriocephalus latus* are similar to that of *Taenia solium*; but the bladder-worm of the *Bothriocephalus latus* is supposed to inhabit some species of fish (perch, pike, and salmon trout?), or possibly a freshwater mollusc."—Parkes and Kenwood, 1923.

The life-histories of *Taenia mediocanellata* (now called *Taenia saginata*) and *Taenia solium* are very similar, as they are closely allied species of the same genus. From these the *Dibothriocephalus latus* differs fundamentally in its life-history as in its structure. Whereas the taenias require only one intermediate host and have a cystic larval stage, the Dibothriocephalus worms require two intermediaries—a species of freshwater crustacea and afterwards a freshwater fish of the family Salmonidae. The larval stage is not cystic.

The necessity for two intermediaries was demonstrated by Rosen. The Mollusca take no part in the spread of any of the tapeworms of man.

Concerning the bilharzia worm the reader is informed that:

The bilharzia worm "probably gains access to the human body through water, either by drinking or by direct infection of the urinary and alimentary tract during bathing. The larva becomes encysted in the body of aquatic crustaceans."—Whitelegge and Newman, 1917.

"The bilharzia probably gains access to the human body through drinking water, as we can follow the ova in their escape by way of the urine from the body of the primary host. In water, these ova hatch into minute ciliated embryos, which have been traced into the bodies of certain freshwater arthropodes, which appear to play the part of intermediate hosts for them, in the same way as certain freshwater crustaceans do for the embryos of the guinea-worm. If the water be drunk containing these arthropodes the transference of these embryos of the bilharzia to man is as simple as it is certain."—Notter and Firth, 1921.

"Probably the embryo becomes attached to some freshwater mollusc (or possibly some fish), and developing into a cercaria form, infects man through the skin or mucous membrane of the mouth and throat, . . ."—Parkes and Kenwood, 1923.

The suggestion that an arthropod is the carrier of bilharzia is an old one and has no foundation even in analogy. Without exception every known digenetic trematode undergoes its metamorphosis in a mollusc, although after leaving the mollusc the infective stage in a few species encysts in crustacea (for example, Paragonimus).

It was definitely proved in 1915 that *Bilharzia haematobia*, or more accurately *Schistosoma haematobium*, requires certain freshwater molluscs as intermediate host, that the infective stages after leaving the intermediary host can only survive in water for about one to two days, and that during this period it can infect man by piercing the skin during ablution. Direct infection from man to man cannot occur; the passage through the mollusc is essential, and this phase occupies about a month.

Little is said about the liver fluke (*Distoma hepaticum*), so, to the dismay of his examiners, the student is not likely to forget that:

"It may infect persons consuming affected livers, and may be found in the tissues, and particularly in the portal system."—Whitelegge and Newman, 1917.

The liver fluke occurs so seldom as a parasite of man that its interest resides, for the sanitarian, chiefly in its frequency in the liver of sheep slaughtered for food. Infection of man when it does occur takes place exactly as with sheep—that is, the parasite in its infective stage, encysted upon grass, is swallowed. This infective stage has resulted from the infection of a freshwater mollusc within which a very considerable multiplication has occurred.

As man is not a normal host for this parasite it occasionally happens that the fluke does not reach the normal habitat in the bile ducts, but may be found in abscesses in the tissues. Such an occurrence is of extreme rarity.

It is evident from the above extracts that the medical

officer of health must look elsewhere for reliable information on the Entozoa, and wishing to end on a helpful note I turned to what are perhaps the most ambitious efforts of American sanitarians. Vaughan makes a real attempt to deal systematically with the Entozoa and their eradication. Among the infestations which receive attention is *Clonorchis sinensis*, the common Asiatic liver fluke. The preventive measures recommended by him are:

"Avoid unnecessary familiarity with cats and dogs; drink only boiled water; eat only well-cooked food. The possibility of the contamination of vegetables which are eaten raw should always be borne in mind; especially is this of importance in countries where fresh faecal matter is largely used for the enrichment of garden soil."—Vaughan, 1923.

All of this is, of course, admirable advice, but it does not seem to have any particular application to a parasite which is transmitted by a freshwater fish.

Unnecessary familiarity with cats and dogs is good prophylaxis against certain tapeworm infestations, of which hydatid is the most dangerous. The boiling of water would appear unnecessary wherever a medical officer of health is responsible for the water supply; I cannot think of any circumstances where it would be a necessary preventive against helminth infection. To eat well cooked food is of course a valuable precaution against parasitic worms; in the specific case of *Clonorchis sinensis* a word of warning should be added against sauces, which might contain infected fish as an ingredient.

The warning against vegetables in this connexion would seem to have reference to salads which might be served with the fish and might give the diner a hyperinfection with *Ascaris lumbricoides*. This view is strengthened by the allusion to the enrichment of garden soil. The whole paragraph illustrates well the degree of confusion which exists in the minds of sanitary experts on the subject of helminthiasis.

Rosenau made incorrect statements in his edition of 1916, as the following extracts will show:

*Trichina*.—"In the case of trichina, for instance, man pollutes the soil with feces containing the eggs. Hogs devour this infection and return the disease to man."—Rosenau, *Preventive Medicine and Hygiene*, 1916.

Many statements have been emended in his 1921 edition, but it may be well to note that the trichina worm lives in crypts in the mucosa of the small intestine. It gives rise, not to eggs, but to embryos. The vast majority of these enter the circulation and are carried to the musculature of the host, where they encyst. Some of the embryos escape into the lumen of the bowel and are discharged in the faeces. The normal host is the pig, and man acquires infection from the eating of encysted larvae in pork. The pig acquires infection from scraps of pig-flesh in the swill-tub. Rats also become infected, and it is just possible that pigs may also become infected from food contaminated with rat faeces containing the discharged embryos as well as from the eating of flesh of infected rats. Man is an accidental host and the larvae encysted in his muscles are "side-tracked." After some months they become calcified.

*Hookworm*.—"It is fairly well established that the eggs of the hookworm may be taken into the stomach through drinking water, and the same is assumed of the similar parasite of Cochin China diarrhea."—Rosenau, 1916.

The eggs of the hookworm are not infective, but the larvae enter the body through the skin, passing by the blood stream to the lungs and thence by the trachea and oesophagus to the intestine.

*Bilharzia*.—"The *Bilharzia haematobia*, and very possibly other intestinal parasites, may likewise be transmitted through drinking water."—Rosenau, 1916.

In this case also infection is through the skin, and, as has already been pointed out, passes from one person to another only through the intermediary of a freshwater snail.

*Lung Fluke*.—"*Paragonimus westermanii*, a fluke (distome) common in Japan and other countries, produces very serious lesions in the lungs, clinically resembling tuberculosis. The parasite is contracted through a microscopic shrimp, or raw fish containing the shrimp."—Rosenau, 1916.

The Asiatic lung fluke produces eggs which appear in the sputum, but are usually swallowed and pass in the faeces. The embryo, after hatching, invades a freshwater mollusc of the genus Melania and therein undergoes an asexual multiplication. The resulting larvae, leaving the mollusc, enter the bodies of certain large freshwater crabs and prawns and encyst. The cysts are afterwards eaten in the flesh, but it is possible that some escape from the gills and are swallowed by natives drinking crude water.

It may be maintained in excuse that the subject-matter of parasitology is so abstruse and inaccessible to the writers of general textbooks on hygiene that its proper presentation cannot be reasonably expected. In reply it may be pointed out that the General Medical Council recognizes for the D.P.H. tuition under medical officers of health in the tropics—for example, deputy assistant directors of hygiene in certain army headquarters, as in Iraq—and that although many of the infestations due to parasitic worms are not peculiar to the tropics, the medical man who has taken a post-graduate course at either of the schools of tropical medicine in England and has obtained the Diploma of Tropical Medicine and Hygiene is usually well grounded in this subject. When occasion arises he is able to place his hands on adequate and up-to-date information, for (thanks to the influence of Manson's life-long interest in parasitology, and to the periodical publication of summaries of the world's literature on helminthiasis in the *Tropical Diseases Bulletin*) the subject is treated comprehensively in nearly every British textbook on tropical medicine.

## General Summary of Ascertained Facts.

From the public health standpoint the following are the significant facts concerning helminth transmission in general:

1. *The parasitic worms do not multiply within the human body.*—Although they produce innumerable eggs or embryos, these are unable to develop within the body into a new generation of adults.

2. *The eggs or embryos must first leave the human body which harbours the parents.*—The great majority leave in the faeces. In one case the eggs appear in the sputum, but as the bulk of the sputum is swallowed they also are mainly passed in the faeces. In another instance the eggs are voided in the urine. The embryos laid by the intestinal worm Strongyloides are passed in the faeces, but those of the Filaria worms which circulate in the blood can only leave if sucked up by a biting insect. The guinea-worm is peculiar, for the female discharges her young through a breach she makes in the skin, in the hope that they may reach water.

3. *The eggs or embryos are not infective to man at the moment of leaving the human body.*—A period of delay is essential before this non-infective stage can become infective (save in the case of *Hymenolepis nana*, with the larvae of which man can also become infected).

4. *Developmental changes occur during the period of delay outside the body and are essential to the formation of the "infective" stage.*—These changes in some instances result only in individual alterations, in others there is an asexual multiplication with the formation of numerous infective forms from the single embryo.

5. *The environmental conditions requisite for the developmental changes outside the body vary with different species.*—It is rare for the extracorporeal phase to be able to withstand drying, and it may be accepted that helminth infections are not blown about in dust. Owing to the relatively long period of delay necessary for development the mechanical transmission of helminth eggs by flies may be ignored as of no practical significance. In some instances (as in Oxyuris, Ascaris, Trichocephalus) moisture is sufficient; in others water is necessary; in others still the egg must first enter or the embryo pierce some other animal, usually invertebrate (arthropod or mollusc), more rarely another mammal. There are cases where the parasite in its developmental stage leaves this "intermediate host" and secretes itself in another host, in the tissues of which it is then swallowed by man.

6. *The parasite in its infective stage* enters the body in most cases by the mouth in food or as contaminations of

food, but in certain instances actively pierces the skin—in hookworm and Strongyloides from a moist surface, in bilharzia during immersion in infected water. Drinking water (except as a vehicle for some encysted flukes and for Cyclops, the intermediate host of the guinea-worm) may be regarded as an unusual medium by which helminth infections gain access to the human body. If considered safe bacteriologically it may be regarded as also safe from the helminthological standpoint.

7. *After entry in the infective stage* the parasite has, in many species, to undertake an extensive pilgrimage within the body—in some cases through the blood stream, in others through the tissues or serous spaces—before it can successfully attain to sexual maturity in its normal habitat. These migrating forms may cause serious damage to the tissues they are traversing (for example, pneumonic changes follow upon the migration of ascaris larvae through the lung).

8. Few of the parasitic worms are specific to man (an instance is *Ancylostoma duodenale*). It more frequently happens that the same species is also prevalent in one or other of the domesticated animals. These additional "reservoir" hosts may play an important role in spreading infection (for example, *Schistosoma japonicum*, the cause of bilharziasis in man in the Far East, occurs in dogs, cats, and cattle in the endemic regions).

9. *Control.*—The spread of helminth infection can be controlled by breaking the life-cycle at certain vulnerable points:

(1) The adults may be killed by anthelmintics while within the human body. (This applies to intestinal forms.)

(2) The eggs or embryos may be killed while within human tissue by therapeutic agents. (This applies so far only to the bilharzia eggs, but a similar remedy against the filaria embryos is being eagerly sought.)

(3) The eggs and embryos, when passed in the body discharges, may be "side-tracked" by "conservation" measures or in many cases simply by lack of access to water necessary for the hatching of the eggs.

(4) Re-entry of the parasite in its infective stage may be prevented by:

(*a*) Avoidance of exposure to infective soil (for example, by the use of boots and clothing to protect the skin in the case of hookworm).

(*b*) Avoidance of open bathing in canals and ponds liable to be contaminated (for example, bilharzia).

(*c*) Avoidance of raw unfiltered water for drinking. (Infection by free eggs or embryos in such water can, however, occur but seldom, as these rapidly sink to the bottom owing to their weight.)

(*d*) The cooking of fish, meat, and shell-fish (including in this term freshwater prawns and crabs), and of vegetables upon which eggs may have been deposited (Ascaris, Trichocephalus) or infective larvae become encysted (for example, *Fasciolopsis buskii*). This involves the avoidance of salads and of Oriental sauces of which uncooked fish may be an ingredient.

(5) Where an intermediate host is essential, a knowledge of its bionomics or susceptibilities may suggest means by which it can be eradicated—for example:

(*a*) The use of chemicals, such as copper sulphate, which have a specific lethal action even in high dilution against freshwater molluscs.

(*b*) The introduction of ducks.

(*c*) The sudden exposure of the molluscs to drying as has been suggested for the control of bilharziasis in Egypt.

(*d*) The reduction of numbers by hand collection, as has been tried against the Melania molluscs responsible for the spread of lung fluke in Asia.

(*e*) The application of antimosquito measures for the control of filariasis.

For details concerning individual species the reader is referred to the recent edition of Brumpt's *Précis de Parasitologie*.

## PREVENTION OF VENEREAL DISEASE.

THE fifth annual general meeting of the Society for the Prevention of Venereal Disease was held on July 10th at 12, Stratford Place, London.

The Right Hon. Sir AUCKLAND GEDDES, G.C.M.G., K.C.B., M.D., in his presidential address, paid a tribute to the work of his predecessor, the late Lord Willoughby de Broke. Remarking that many in this generation were frightened of the subject of sex, Sir Auckland Geddes insisted that it was necessary to face the facts. Sexual appetites were strong in youth, and could only be controlled and kept in check without moral and mental harm when there was understanding and frank recognition of their existence and normality. The policy of hush! was often fatal. He agreed that to determine the age at which childish innocence should end was difficult; no doubt it was essential to preserve it in childhood, but highly wrong and dangerous to allow it to continue too long. Whatever age line was drawn must be arbitrary—for some too late, for some too early. But considering all things, he thought that 18 years of age was a fair average for complete knowledge in the case of males. Females should be dealt with much more individually, but certainly information should be available for them on request at any time after 18. He recognized the dangers. There was some risk of encouraging in young unbalanced minds the belief that all young persons should indulge in promiscuous sexual intercourse. But in the case of normal young men, if they had not met that idea by the age of 18, they would certainly meet it at 19 or 20. The remedy for this danger, in so far as it existed, was not to withhold knowledge, but in the years before, by the proper influence of religion and training, to build stronger and better balanced characters. He had no patience with those who claimed on moral grounds the right to withhold knowledge from adults. Morality based on ignorant fear was no morality. The Society was not, therefore, engaged in attempting to corrupt childhood. On the contrary, it sought to protect childhood, and through knowledge to make adolescence stronger, not only morally, but physically. Children formed the section of the community which would gain most from the stamping out of venereal disease, and then adolescents next in order would not only gain physically but morally. It appeared to him that much of the controversy that had existed was based upon a failure to recognize that there were two sides to this question, as there were to the problems of all organismal diseases—the human side and the organismal side. In practically all diseases there were questions of human knowledge, self-control, care of others, and so on; in short, morals entered. To exterminate venereal disease, ceaseless and relentless war must be waged on causal organisms wherever they were or might be suspected to be. The policy of the Society was to wage war without quarter on the organisms, which, so far as could be judged, were wholly impervious to moral considerations.

"Their simple philosophy is to multiply. Ours with regard to them can be equally simple—to kill. That does not mean that we are not fully alive to the human problems involved, but it does mean that we find it difficult to understand the minds of people, if there be any such left, who declare it to be their desire to combat venereal diseases and then try to secure complete protection and assistance for the organisms at their most vulnerable, and yet if not attacked, most dangerous, moment." If we had one strong society recognizing equally the two sets of problems—the human and the organismal—I should be glad. But it is no use having union with our sister society unless the two sides of the problem are to be recognized fully by the new united society. Personally, though there is an appeal in unity, I see no case for union either in reason or sense if the result is to be to diminish the weight of the attack on the causal organisms of the venereal diseases. The whole technique and practice of disinfection is an essential weapon and arm in the struggle against venereal diseases. Let that be frankly recognized and union is at once possible."

On the motion of the President the following resolution was adopted:

> That this meeting respectfully requests the Minister of Health to allocate to the Society for the Prevention of Venereal Disease an equitable proportion of any sum set aside for the education of the public regarding venereal disease and its prevention, and draws his attention to the acknowledgement of the value of the educational work of the Society for the Prevention of Venereal Disease by former Ministers of

Health; by the Committee of Inquiry recently held under the chairmanship of Lord Trevethin; and also by eminent leaders of religious thought of all denominations; and further desires to emphasize the fact that while in the past financial assistance out of public funds has been granted to an organization specially interested in moral prevention and treatment after infection, education in the important aspect of medical prevention has hitherto been left to the Society for the Prevention of Venereal Disease to carry out without any such assistance from public funds.

Mr. WANSEY BAYLY, in presenting his report as honorary secretary, spoke of the splendid work Lord Willoughby de Broke had performed as President of the Society. At every meeting of the liaison committee of the National Council for Combating Venereal Diseases and the Society for the Prevention of Venereal Disease the two societies got more and more into line, and they had very great hopes of a successful issue to their negotiations. Mr. Bayly then laid before the meeting the details of the Society's work during the past year. Mr. HARRY MACHIN, in the absence of Sir William Arbuthnot Lane, the senior joint treasurer, presented the treasurer's report, and congratulated the Society on the efficient and economic way in which its funds were administered. Lady ASKWITH, chairman of the Women's Committee of the Society, appealed for greater energy on the part of all interested in the campaign against these diseases. Dr. J. H. SEQUEIRA, chairman of the Executive Committee, urged the necessity for official recognition of the work of the Society. The sailor and the soldier, he said, were taught the principles of self-disinfection, and it was equally necessary to educate the civilian. Mr. FRANK SOUTER, vice-chairman of the Executive Committee, briefly indicated the value of the work of the Society from the point of view of a non-medical member. Dr. WALTER ELLIOT, M.P., speaking from the parliamentary point of view, urged the need for the alteration of the law which was stated by Mr. Neville Chamberlain, when Minister of Health, to be necessary, in order to permit of the sale by chemists of approved disinfectants, accompanied by printed instructions.

## OXFORD OPHTHALMOLOGICAL CONGRESS.

UNDER the mastership of Sir Anderson Critchett, Bt., K.C.V.O., the Oxford Ophthalmological Congress held its fifteenth annual meeting at Oxford on July 2nd, 3rd, 4th, and 5th. With a membership of 380 the expectation that it would be well attended was realized, for the number closely approached that of last year, which stands as a record. The proceedings were held as before in the Department of Human Anatomy, through the kindness of Professor Arthur Thomson, whilst the hospitality of Keble College was again available for board and lodging.

### *Work of the Congress.*

On July 3rd the Congress was opened by the Master with an address of welcome, in which, after witty allusions to the programme, he expressed pleasure at the presence of Dr. E. Landolt of Paris and Dr. G. de Schweinitz with others from America. This was followed by a discussion on the general principles of the treatment of convergent concomitant strabismus (excluding the description of details of operations), the openers being Dr. E. Landolt of Paris and Dr. Ernest Thomson of Stirling. Dr. G. E. de Schweinitz (Philadelphia), Dr. T. Harrison Bulter (Birmingham), Mr. R. Beatson Hird (Birmingham), Mr. Ernest Clarke (London), Mr. A. F. MacCallan (London), Mr. Claud Worth (London), Mr. Angus MacGillivray (Dundee), Dr. Stewart Barrie (Glasgow), and Dr. Marion Gilchrist (Glasgow) contributed to the discussion.

In the afternoon demonstrations were given in the Scientific Museum. Dr. George Young (Colchester) described his operation of double sclerectomy by trephining without communication with the anterior chamber, and showed a specimen illustrating the success of the procedure. Dr. Rayner Batten (London) showed with the epidiascope a valuable collection of drawings of fundi from cases of cardio-vascular disease, macular, cerebro-macular, and congenital diseases, with a number of others unclassified. He also demonstrated models of fundus conditions, the hydrophthalmoscope, special rigid spectacles for ptosis with a case showing their value, a fixation fork for the insertion of sutures in advancements, and tension experiments with balloons. Dr. Thomson Henderson (Nottingham) showed a good series of pathological sections, including a number to illustrate the evolution of ciliary muscle in mammalia. Dr. H. M. Traquair (Edinburgh) gave a demonstration of his method of perimetry. Mr. J. H. Tomlinson (London) showed: (1) Pulfrich's illusion; (2) independence of colour perception of the two eyes; (3) query summation of brilliance value of the two eyes. Mr. A. F. MacCallan (London) gave a short account of the treatment of trachoma. Mr. P. H. Adams showed some interesting specimens of secondary carcinoma of the choroid and other conditions. Dr. Harrison Butler (Birmingham) demonstrated Hess's apparatus for the investigation of muscle paresis, and Mr. Arthur Greene (Norwich) showed a pair of double scissors for use in the lengthening of muscles by partial section.

On Friday morning Dr. Howard F. Hansell (Philadelphia) opened the session with a paper describing four cases of atypical retinitis pigmentosa associated with developmental abnormalities and occurring in members of one family, and was followed by Professor H. Friedenwald (Baltimore), who dealt in an interesting contribution with the relationship between chorio-retinitis juxtapapillaris (Jensen's disease) to other forms of chorio-retinitis. After a short interval Dr. Harrison Butler delivered the Doyne Memorial Lecture, his subject being focal illumination of the eye with special reference to the clinical use of the Gullstrand slit-lamp. As a pioneer in the subject in this country the lecturer was closely followed, much interest being shown in the admirable series of original pictures illustrating various pathological conditions as seen with the corneal microscope and the slit-lamp.[1] At the close Dr. Butler was presented by the Master with the Doyne Memorial Medal. The morning session closed with a short address by Dr. Park Lewis on preventive ophthalmology as an organized movement, in which he urged the value of international co-operation.

The afternoon session was held at the Oxford Eye Hospital, where a demonstration of the corneal microscope and Gullstrand slit-lamp was held under the direction of Dr. Harrison Butler, assisted by Mr. R. J. Coulter and Mr. B. Cridland. Four instruments were in use, and a good number of patients were available for examination through the help of the Deputy Master, Mr. P. H. Adams.

On Saturday morning a paper was read by Mr. H. Holmes Joy, K.C., dealing with such legal matters and procedure as might especially concern the medical man in general and the ophthalmic surgeon in particular. Containing much useful advice to the expert medical witness and the specialist medical referee, the paper was well received and greatly appreciated by a good audience. In conclusion, Mr. Joy raised the question as to whether one attack of coalminers' nystagmus gave rise to an increased susceptibility to future attacks, and stated that it would be of considerable assistance with regard to compensation cases under the Workmen's Compensation Act if some unanimity of opinion could be expressed by the Congress upon the point. A good discussion followed in which the following took part: Messrs. C. F. Harford, Arthur Greene, B. Cridland, Colonel A. H. Tubby, Messrs. R. J. Coulter, R. Jaques, G. H. Pooley, E. Park Lewis, A. S. Percival, Angus Macgillivray, and Lister Llewellyn.

In the Commercial Museum fourteen firms of ophthalmic instrument makers exhibited models of the newest appliances and apparatus used in ophthalmic work, whilst an exhibit which attracted a good deal of attention was that of the manufacture of artificial eyes, in which the process could be followed from the beginning to the finished product.

### *Social Functions.*

On the afternoon of Thursday, July 3rd, a garden party had been arranged in the Gardens of University College, but owing to the weather the members of the Congress and their friends were received in the Hall of the College—Dr. Ainley Walker, Dean of the Medical Faculty of the University, and Mrs. Walker acting as host and hostess. The annual dinner of the Congress was held on the same day in the Hall of Keble College, and was well attended, amongst those present being Sir T. Herbert Warren, the President of Magdalen College, Dr. Ainley Walker, Dr. de Schweinitz, Sir George Berry, Dr. Gibson, Dr. Howard F. Hansell, Dr. Park Lewis, Professor Friedenwald, and others.

No meeting of the Congress will take place in 1925 on account of the Convention of English-speaking Ophthalmological Societies, which will be held in London in July of that year.

[1] See BRITISH MEDICAL JOURNAL, May 31st, 1924, p. 945.

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SATURDAY, JULY 19TH, 1924.

## WORMS AND OTHER PARASITES.

THE establishment of the various diplomas in tropical medicine was in effect a recognition that animal as well as vegetable parasites play a part in causing disease in man. Although medicine was quick to recognize the importance of these in the warmer parts of the world, it has to a large extent failed to realize their significance in the more temperate climates.

Parasitology, strictly interpreted, might be held to include bacteriology, the virus diseases, and mycology; and in France and some other countries its connotation is extended to the last named. In this country the term is generally confined to the study of the animal parasites. The three great groups of animal parasites —protozoa, arthropoda, and the parasitic worms— are the subjects respectively of the sciences of protozoology, entomology, and helminthology. Each group, while flourishing more luxuriantly in the tropics, is by no means to be neglected in the colder regions. Under protozoology, for example, fall the parasites of malaria (and ague was in the past a common disease in England, including London), the various protozoal organisms producing that form of dysentery, and possibly also the spirochaetes, although modern opinion is in favour of relegating the latter to bacteriology. Within the domain of entomology are found a diverse array of human pests: the house-fly (or, better, the typhoid fly); the various biting flies so common in summer in parts of the country; the gnat or mosquito, the carrier of malaria and other diseases, which is found even in the Arctic regions; the humble and ubiquitous louse, with its dangers of trench fever and typhus; the fleas, with their array of parasites— plague among others; the bed-bug with its potentialities; the ticks and mites which produce various diseases and poisons, are but a few examples. The significance of the arthropods is as carriers rather than as actual causes of disease. Under helminthology is an enormous array of parasites, including the common roundworm with its curious life-cycle through the lungs and the attendant pneumonia; the hookworms, which have been shown to be the cause of most of the depression of health among the inhabitants of the southern United States; the pinworms and whipworms so common in children; the notorious hydatid—not a very rare parasite in this country; and many others.

The first duty of a public health official is to prevent disease. Because a disease is not at the moment rampant, or is not diagnosed, is no reason why he should not be well acquainted with the fundamental principles of some human ailments which are both important and serious. Parasitology is largely a science of prevention rather than of cure. Fortunately, the General Medical Council has recognized the claims of the subject, and it may be expected that, as a result of this recognition, its teaching will be placed in the hands of experts and will be accorded a position worthy of its importance. The attainment of this desirable end will no doubt be accelerated by the establishment of the London School of Hygiene, and the amalgamation with it of the London School of Tropical Medicine. Professor R. T. Leiper, in our present issue (p. 110), has, in an expansion of a paper contributed by him to the recent congress at Bordeaux of the Royal Institute of Public Health, revealed certain insufficiencies and inaccuracies to be found in leading British and American textbooks in their manner of dealing with helminthology; and in a recent number of *Parasitology* Professor Nuttall has emphasized the lack of accurate modern knowledge among teachers, and—what is hardly less important —among examiners also. The explanation, perhaps, is that though a great deal of new knowledge has been gained in recent years, most of it has been scattered through periodicals not generally available. On the other hand, Professor Leiper points out that practically all has been abstracted in the *Tropical Diseases Bulletin*. So far as this country is concerned, periodicals devoted solely to the subject, although few, are good. We have the *Journal of Helminthology*, the only journal devoted entirely to a study of the parasitic worms; *Parasitology*, more general and including all branches; and the publications of the Imperial Bureau of Entomology. The failure to obtain the services of efficient teachers is perhaps more difficult to explain. It may be that the demand has been small, but it has become essential that parasitology should be properly taught; yet at present the student during the ordinary medical curriculum hears very little about it after he has passed his examination in zoology. Lack of material cannot be considered a valid excuse, for, though specimens of human parasites may not be easy to obtain, closely related species of practically all may be found in the domestic and laboratory animals. The subject is essentially a department of comparative pathology, and much information is to be gathered from the parasites of the animals in contact with man. While candidates for the Diploma in Public Health, or for that in Tropical Medicine and Hygiene, should be specially trained in the subject, every medical student should have a knowledge of the essential facts of parasitology. No public health service can be efficient without the active co-operation of the general practitioner, and if his knowledge of parasites is confined to what is generally taught on the subject progress is impossible. The mistakes made in the course of diagnosis by otherwise very efficient workers would be ludicrous if they were not so lamentable. Thus pieces of undigested banana fragments are mistaken for tapeworms, immature earthworms in tap water are diagnosed as ascarids, and so on.

In France all medical students attend a course in parasitology during one academic year. Is it too much to expect that we should at least not be behind our Continental neighbours in this respect?

## DIET IN MENTAL HOSPITALS.

THE recently published report of the Departmental Committee appointed by Sir F. J. Willis, chairman of the Board of Control, to consider the dietaries in county and borough mental hospitals, and to report what changes, if any, are desirable, and whether a minimum dietary scale should be fixed, is a document of considerable importance from both the scientific and the practical point of view.[1] The recommendations made by the Committee are based upon a comprehensive inquiry into the existing mental hospital dietaries. These showed a physiological sufficiency in

[1] Report of the Departmental Committee appointed to Inquire into Certain Matters Relating to the Diet of Patients in County and Borough Mental Hospitals. London: H.M. Stationery Office, or through any bookseller. 1924. 6s. 6d. net.

a large proportion of cases, but they were found to be capable of improvement in many directions. There was a lack of uniformity in the principles governing feeding arrangements generally, and the construction of institution dietaries; marked monotony in very many cases; here and there some suggestion of inadequacy, with evidence, on the other hand, in certain instances, of excessive supply, especially of particular articles, and too little ground for belief that sufficient attention had been paid to the adequate provision of those accessory food factors (vitamins) that are now regarded by the majority of food experts as essential to the maintenance of vigour and of power to resist disease. The inquiry having thus revealed the fact that the dietaries are (or rather, were when the circular letter from the Board of Control was issued in March, 1922) in some instances inadequate when examined from the standpoint of modern knowledge of the physiology of nutrition, the report will be a valuable guide to those who are concerned with the care of the insane. It deals fully with the question of accessory food factors; provides valuable suggestions for the most efficient methods for the supply, preparation, cooking, and distribution of food; and concludes with a number of recommendations which will no doubt be generally adopted in mental hospitals. Indeed, the report contains so much useful information that, though it is primarily concerned with the dietetic requirements of the insane, it merits the attention, not only of the authorities of mental hospitals, but of the governing bodies of any institutions who are confronted with the difficult task of providing an adequate, varied, and appetizing diet for a large number of inmates.

The diet of the insane is, however, a problem in itself; factors have to be taken into account which do not operate in normal persons, because the subjects of mental disorder exhibit, in a large number of instances, biological changes or inferiorities, both inherent and acquired, which have to be taken into account when diet is under consideration. In assessing the general state of nutrition of the population of mental hospitals it must be borne in mind that this population differs from the general population in a peculiar way. It is certain that the average anthropometric characters of mental hospital patients are unlike those of the general population. This subject is dealt with in Appendix B of the report by Dr. Major Greenwood, whose investigations lead him to support the conclusion, long held, that a mental hospital population is, on the average, organically differentiated from the general population. Apart, however, from these inherent factors, as the report shows, there is an interrelation between psychological and physiological disturbances. In support of this view, which can scarcely be disputed, the following remarks of Allers are cited: "In long continued states of depressive affect, the whole of the processes of digestion are seriously impaired, although we cannot assert positively that it is the state of melancholia which causes the digestive inertia; perhaps both factors, the physiological anomaly and the disturbance of digestion, are produced by a third common factor. That the common hypochondriacal delusions of melancholics are associated with digestive disturbances is hardly doubtful. Again, the multifarious hypochondriacal fancies of neurasthenics may be in part associated with real (secondary) changes in the abdominal viscera; it is admitted, of course, that for the most part they are purely conceptual."

It may be said in a general way that in all cases of acute mental disorder, and in a large number of chronic cases, there are biochemical changes and metabolic disorders. This view is adopted by the Committee, and the model dietary, which is described in detail, takes into account the quantitative and qualitative composition of a diet which should be provided for a population admittedly prone to metabolic disturbance and admittedly subject to bodily disease. In formulating a diet for a mental hospital the difficult problem arises as to how far the extreme variations in the expenditure of energy by patients should be met by variations in diet. The question arises more particularly in relation to the worker and non-worker, it being customary in many mental hospitals to supply supplementary food to the former, partly as a reward for work done and partly on account of the increased expenditure of energy during manual work. It is shown in the report, however, that the formulation of a large number of different scales regulated by the amount of energy expended by the various types of patient is an impossible task, as the line of demarcation between workers and non-workers is so ill defined and variable from day to day. In these circumstances it was decided to regard all inmates of mental hospitals as falling within one or other of two categories from the dietetic point of view: (1) the physically fit, including the workers of all classes, and the non-workers who, though physically fit, decline to work or who are unfit to do so for reasons due to mental disease, which renders them unfit to be trusted with implements of any kind, or which exhibits itself in excitement, resulting in expenditure of energy equivalent to hard or moderately hard work; and (2) the sick and infirm, including those patients who pass their time in a state of inactivity, as in the case of idiots, profound melancholics, and dements. While, however, it is obviously necessary that the diet should be strictly regulated according to the physical needs of the patient, and not according to his value to the community life of the hospital as a worker, it is equally necessary, especially in view of the therapeutic value of occupation, to offer rewards to the patients for work done. In some ways the insane patient does not differ from the normal person; like the latter, he does not commonly employ himself from the love of work, from an urge within, but from external inducements which add to his material comfort. Experience has shown the value for increasing the output of work of the token system and the provision of facilities for the purchase of luxuries such as tobacco, sweets, or articles of any description likely to afford pleasure, and some such system is advocated in the report.

There is much in this report deserving of comment, but it will no doubt receive the careful attention of all those responsible for the care of the insane, and we regard it as a contribution of considerable value to the literature of asylum administration.

## FOOT-AND-MOUTH DISEASE IN MAN AND ANIMALS.

ALTHOUGH, as we stated in our issue of May 24th (p. 925), the validity of the Dahmen-Frosch bacillus as the cause of foot-and-mouth disease would seem to have been confirmed by the German committee set up to investigate it, many points have to be settled before we can be satisfied that the disease can, in consequence, be controlled on scientific lines. For example, the status of the Pfeiler virus requires to be ascertained. Professor Pfeiler of Jena obtained two strains of what he considers to be the virus of the disease, and although he has not yet published

any details of his method, vaccines prepared from both strains have been tested in Holland. Experiments made with the vaccine from the first strain (A) have not given satisfactory results, but those obtained with the second (B) are considered to render it worthy of further trial, and such trials are being made. The possibility of the plurality of viruses is, of course, not a new idea. Titze[1] in 1921 suggested this, and Vallée and Carré in the following year discovered that two types existed—one of German (A) and one of French (O) origin, distinguished by the absence of cross-immunity. Later workers have been led to believe that there exist an aphthous and a para-aphthous fever, very similar or identical clinically; it has been suggested that only one of these forms is capable of infecting man.

Records of the disease in man are gradually being accumulated. One of the most interesting of these is reported by Gerlach[2] as occurring in his own daughter, aged 5½ years. Two days after drinking infected milk the child began to suffer from violent headache and rigors, with a temperature of 103° F., and vesicles appeared on the following day. The symptoms gradually subsided, and had disappeared in ten days from the onset. The nature of the disease was confirmed by inoculation of guinea-pigs on the foot, and it is suggested that these animals should be used for diagnosis of human infections. Although the disease is comparatively benign in man, its diagnosis is of importance in order to avoid the transmission of the disease to animals.

French workers have recently drawn attention to several important bacteriological points. They have shown that the blood of an infected animal is virulent as soon as the fever sets in, and well before the eruption of the vesicles. This virulence extends to all the liquids excreted or secreted; they become active agents of transmission long before any suspicious symptoms can be observed. The virus is quickly destroyed, however, and within four or five days of the first rise of temperature the animal is not infective. This observation may have a very important bearing on the prevention of the disease. The mode of contagion and the means of spread of the virus, however, are still very far from being understood. The essential sources of infection are the infected animals, especially (possibly only) at the period of invasion and the commencement of the eruptions. The appearance of the disease in unsuspected quarters is difficult to understand. Certain outbreaks can be explained by the persistence of the active virus in the horn of the feet, certain others by transference on shoes, carts, cattle trucks, hay, and other inanimate but movable objects, and many more by the existence of the disease in "abnormal" hosts—man, birds, dogs, and rats and other rodents.

Another line of investigation of urgent importance is into the methods of inoculation, preventive and curative. Much work has been done abroad on this subject, but it also presents many unsolved problems. The French authorities are very hopeful of good results from a method of sero-vaccination. An injection of virulent blood is given simultaneously or shortly after an injection of blood from a recovered animal. A modification of this method, using a virus of known virulence prepared from the cultured organism, has been suggested by Lignières[3] in the course of an exhaustive review of this branch of the subject.

We understand that the Committee of the Ministry of Agriculture has two representatives in Germany studying the Frosch-Dahmen method in order to undertake confirmatory tests in this country. Recently, in reply to a question in the House of Commons, the Minister of Agriculture stated that arrangements had been made for the supply of the virus and for investigations on small animals at several laboratories under the direction of the Committee. Moreover, an experimental station for investigations on farm animals had been approved, and plans drawn up for its equipment. The Committee does not desire to restrict laboratory investigations to persons working under its direction, and it has therefore drawn up regulations under which independent research might be carried out. These regulations are designed to remove any risk of infection.

We are glad to note this change of attitude on the part of the Board of Agriculture, and venture to think that the criticisms we felt bound to make six months ago may have had something to do with its present chastened state of mind. No exception need be taken to the decision of the Committee not to permit investigation on farm animals except under its immediate direction.

[1] *Arch. f. wissen. u. prakt. Tierh.*
[2] *Wiener klin. Woch.*, February 28th, 1924.
[3] *Rec. Méd. Vét.*, 1924, pp. 58-83, 94-109.

## MEDICINE'S DEBT TO RADIOLOGY.

WHEN Roentgen first showed that radiations, which he named "*x* rays," could penetrate substances opaque to ordinary light, and could impress upon a photographic plate shadows of such substances according to their density, the medical profession was prompt to apply this property of the rays to diagnostic uses. Immediately on the publication of Roentgen's paper early in 1896, James Mackenzie Davidson perceived the importance of the discovery to medical and surgical practice, and began to experiment with the new rays. He died in April, 1919, and his pioneer work is commemorated each year in a lecture, delivered alternately by a pure scientist and a member of the medical profession. The war provided an object-lesson in the value of *x* rays in the diagnosis of bone injuries and the localization of projectiles, and in other directions medical radiology has made astonishing progress during recent years. In his Mackenzie Davidson Lecture (published this week at page 89) Sir Thomas Horder discusses the influence of radiology upon our conceptions of disease, indicating some of the ways in which the rapid advance of this science has led to a revision of our ideas about certain functions and structures in health and disease. He points out that radiologists, although working with shadows rather than with substances, are, unlike morbid anatomists, often able to study both structure and function, and, unlike operating surgeons, have ample time for their observations. In his view radiology more than any other branch of medical science is changing our attitude towards disease processes—confirming some important hypotheses, eliminating others, and suggesting new lines of thought. Thus the confirmatory evidence given by radiology has carried the doctrine of focal sepsis out of the realm of hypothesis into that of established fact; radiological investigations have revolutionized our knowledge of the anatomical relations and motor functions of the hollow viscera, both in health and disease; and knowledge of disease of the lymphatic glands has been illuminated from the same source. So, too, he predicts that the treatment of malignant growths by radium and *x* rays will soon yield important facts, the understanding of which will help to crystallize ideas upon some of the causative factors, and enable remedies to be controlled with better prospect of success. In discussing how radiology might do even more in some of these various directions, Sir Thomas Horder endorses the opinion, often expressed in these columns, that it is the duty of radio-

logists, not only to take good skiagrams, but to interpret them, and to co-operate generally in diagnosis. There is, he says, every reason why the radiologist should be a clinician in spirit, for to divorce clinical medicine and radiology is to impoverish both. Hence closer association between clinician and radiologist, and more exchange of views, are desirable. But at this point Sir Thomas warns his radiological colleagues not to strain their method past its possibilities in their interpretation of results—in other words, not to theorize; and there are many who will think that this word of caution is needed. Timely, also, is his insistence, towards the close of the lecture, on the essential unity of pathological processes. "Though clinical medicine sees one aspect of a disease, and radiology another, and morbid anatomy a third, and parasitology a fourth, the disease is one and the same, and our best conception of it is obtained, not by undue insistence upon any one of these aspects, but by a proportionate mingling of the pictures presented by all."

## BLASTOMYCOTIC INFECTION OF THE NERVOUS SYSTEM.

THE large group of yeast-like fungi receive little attention in textbooks of human pathology and bacteriology because but few diseases are caused by them, and even these are rare. The biologist finds the yeast-like fungi a troublesome genus, for the more they are studied the more diversity appears, and reliable tests for identification are not easy to find. They have received most attention from microbiologists working at industrial fermentations, in particular brewing and alcoholic fermentation; the practical trend of these investigations has not led them far beyond the point of distinguishing between the types that are useful and those that are harmful to industrial processes. We find, therefore, little order in the classification of these microscopic organisms. That yeast-like fungi co-operate in a helpful way in plant life and play an important part in the decomposition of carbohydrate foods is well known; few of them are capable of living as parasites within the tissues of warm-blooded animals. To man the yeast-like fungi have been notable benefactors, witness bread-making. But there exist a small group of yeast-like fungi, usually referred to as pathogenic yeasts, which have been proved to originate human disease. Little is known of the conditions which determine the infectivity of these pathogenic yeasts, and they remain pathological curiosities. In the current number of *Medical Science, Abstracts and Reviews* (vol. x, No. 4, July, 1924) Dr. J. G. Greenfield contributes a review of the literature on blastomycotic infection of the nervous system. He begins by calling attention to the fact that infection of the central nervous system by yeast-like organisms, although of rare occurrence in Europe, has been reported with increasing frequency in both America and Australia. This is borne out by the fact that none of the references he quotes are books or periodicals published in the British Isles. Symptoms of cerebral disease have most frequently appeared in the final stage of systemic or subcutaneous blastomycosis, but in a few instances the disease has either been limited to the central nervous system, or signs of brain disease have preponderated. He gives an account of the way in which these yeast-like fungi have been arbitrarily classified in four groups, and records the pathological characteristics of each infection. In the majority of cases abscesses occurred in the brain and the lesions resembled those of tuberculosis, from which they could only be distinguished by histological methods of study. In some cases there was a tendency to the formation of gelatinous cystic cavities with little cellular reaction and absence of pus. The clinical picture of these blastomycotic infections of the nervous system varies greatly, but usually there have been symptoms of cerebral tumour, with headache and often vomiting and occasionally mental symptoms. In many of the reported cases yeast cells were not found in the cerebro-spinal fluid in the first examination, and in others their appearance either in the fluid or on culture was considered to be due to contamination. Dr. Greenfield remarks that the frequency with which these sporadic cases of blastomycotic meningitis were originally diagnosed as tuberculous meningitis suggests that infection of the meninges with this kind of organism is much more common than is generally supposed. But the duration of symptoms in most of the cases is too long for tuberculous meningitis, and loss of sight or of hearing is rarely seen as an early symptom in that disease. It is to be hoped that if cases of such infection are met with in the future cultures will be sent to some central laboratory, such as the National Collection of Type Cultures at the Lister Institute, so that they may be carefully examined and correlated with other organisms of the same class.

## MILK ACIDIFIED WITH LEMON JUICE.

ONE important difference between cow's milk and human milk, often neglected in tables comparing their chemical composition, is that cow's milk, being richer in buffer constituents, requires much more acid to acidify it in the stomach than human milk. Because of the larger quantities of these buffer substances in cow's milk more of the acid stomach secretion is rendered inactive with cow's milk than with human milk. Some pediatricians who have realized the significance of this distinction have suggested that cow's milk for infant feeding should first be acidified with an inorganic acid or with lactic acid, on the assumption that such acid milk would be more easily digested. Acid buttermilk has been used for infant feeding for many generations, and, though the use of cow's milk treated with inorganic or organic acid has not yet received sufficient trial to establish any clinical advantage, sufficient experience has accumulated to show that these acid milks are well received, especially by marasmic infants. To secure sufficient of the antiscorbutic vitamin the diet of an infant fed on cow's milk is often supplemented with some acid fruit juice, such as orange juice, as a routine, but it is the usual practice to give this between meals and not with the milk. Dr. A. E. Hess and Dr. M. J. Matzner[1] aim at killing two birds with one stone by adding sufficient antiscorbutic acid fruit juice to acidify the milk, thereby supplying vitamin C and also diminishing the buffer substances which would have rendered much of the gastric secretion inactive. Preliminary tests having shown that both orange juice and tomato juice, though rich in vitamin C, were feeble in acidity, they turned to lemon juice, which is an even more efficient acidifying agent of cow's milk than normal hydrochloric acid. They recommend the following formula: milk, 24 oz. (710 c.cm.); water, 12 oz. (355 c.cm.); sucrose, 1/2 oz. (15 grams); lemon juice, 21 c.cm. This quantity of lemon juice imparts a pleasant taste but barely detectable acid flavour to the milk; it is well tolerated by infants, and occasions no alteration in the urine or faeces. The method has been thoroughly tried by Drs. Hess and Matzner in the children's wards of their hospital, and they state that they have observed no signs or symptoms that make it advisable to change the formula. To secure adequate antirachitic elements in the diet of infants the addition of one egg yolk to a quart of milk has been found to be of decided therapeutic value. The egg yolk can be added to milk acidified with lemon juice, thereby ensuring a food rich in both vitamins—A and C. It is claimed that this mixture is more easily digested than simple cow's milk because of the reduction of the buffer action by the acids of lemon juice. Furthermore, the egg yolk supplies additional iron to the diet—an element in which cow's milk is deficient. This combination of egg yolk with milk acidified with lemon juice is easily assimilated by delicate children also.

[1] *Journ. Amer. Med. Assoc.*, May 17th, 1924.

## THE PUBLICATIONS OF THE AMERICAN MEDICAL ASSOCIATION.

THE *Journal of the American Medical Association* is the organ by which its members are kept in relation with each other and with the central organization. It is a medical journal of the highest standing; it publishes original articles, both clinical and scientific, many of them of great merit; editorial articles of comment on both social and scientific questions, and an analysis of the principal medical journals of the world, which is conducted on a somewhat different plan and larger scale than the Epitome of the BRITISH MEDICAL JOURNAL. A Spanish edition of the *Journal* is published also, and in financing this the American Medical Association has the assistance of the Rockefeller Foundation. Its circulation is a little over 4,000 copies, and, if we understand correctly the statement in the report of the Board of Trustees, over half is gratuitous. It is, however, hoped in time to establish the Spanish edition on a firm financial basis. The American Medical Association also publishes five special journals—the *Archives of Internal Medicine*, the *American Journal of Diseases of Children*, the *Archives of Surgery*, the *Archives of Neurology and Psychiatry*, and the *Archives of Dermatology and Syphilology*. Taken together the five journals rather more than pay their way. The Board of Trustees has decided to publish another special journal, the *Archives of Oto-Laryngology*. Its first number will be issued on January 1st, 1925; like the other special journals, it will be conducted by an editorial board. The chairman of the board of the new journal is Dr. George E. Shambaugh of Chicago, and there are five other members selected from nominations made by a large number of Fellows of the Association who specialize in oto-laryngology. It is not expected that the circulation of any one of the journals will ever be large, though it is hoped eventually to make each pay its way. But these special journals are considered of such advantage and importance to the medical profession and to American medicine that they will be continued even though there may be a money loss in publishing them. We have on more than one occasion called attention to the *Quarterly Cumulative Index to Medical Literature* issued by the American Medical Association; its circulation in 1923 was 1,201—a gain of 72 over the previous year. The foreign subscribers in 1923 numbered 147, and it is believed that as the value of the *Index* becomes better known the number of medical libraries outside the United States which will subscribe for it will increase. At present it is issued at a loss, but it is recognized to be one of the means by which the Association promotes scientific medicine and indicates to the world what the American profession is doing in medical science. The abstracting department of the Association has been amplified in order to make available better abstracts for the *Journal* and the special journals, and to provide better facilities for Fellows and members. The library also has been developed. Finally, the American Medical Association issues a popular monthly journal—*Hygeia*—which in 1923 attained a circulation of 23,687; among the subscribers were 9,512 laymen. It is attractively got up and copiously illustrated. It has not yet covered its expenses; in fact, it is at present a costly venture, but it is looked upon as a means of educating the public in personal hygiene and the principles of public health, and in the achievements of modern medicine.

## WESTMINSTER HOSPITAL.

THE enlargement and renovation of Westminster Hospital are now complete. When the need for these improvements was first realized, the proposal to build a new hospital on another site further from the centre of London was carefully considered, but, as we have previously stated, it was found that the cost would have been very much greater than that entailed by a thorough modernizing of the present building, and it was believed that by severing the long association of the hospital with the City of Westminster its appeal to the citizens would be prejudiced. The total sum expended on alterations is £72,000, and the whole has been received from the public. The reconstruction has enabled provision to be made for a second operating theatre for in-patients; for an operating theatre and a recovery room for out-patients; and for an enlarged electrical and *x*-ray department; improvements have been made in the dispensary and surgery. New kitchens have been constructed on the top floor; and bathrooms and ward kitchens in the children's ward, in the ward for incurable patients, and in the Hallett ward. A maternity ward and special wards for male and female ear, nose, throat, and eye patients have been formed. The pathological laboratory has been extended and improved accommodation provided for the resident medical staff. There are now fourteen beds for the reception of sick nurses or paying patients; and a new nurses' home has been equipped in Queen Anne's Gate. In addition there have been installed electric lifts; radiator heating apparatus and an efficient hot water service through the wards and departments; an internal telephone system; and an electric fire alarm system. The whole of the changes have been made with a keen sense of what is required to give the hospital the highest efficiency without ornateness, and the improvements are highly appreciated by the medical staff. On Tuesday, July 15th, an At Home was held at the hospital, and Sir James Purves-Stewart, senior physician, met a party of journalists and pointed out to them the gains all round. The hospital has been closed nearly a year, but the out-patient department was maintained in the medical school in Caxton Street; it has now been restarted in the hospital. Owing to the builders' strike there has been a slight delay in the finishing touches, and the hospital cannot be fully reopened this week. The first in-patients will be admitted on Monday, July 28th. Sir Edward Pearson, chairman of the hospital, and Lady Pearson, received the many guests at the informal ceremony on Tuesday. Sir H. Mallaby-Deeley, who made the conditional gift of £16,000 to assist the final appeal, was present with Sir Robert Hudson, treasurer, and Lady Hudson. The proceedings had their complement in a service of thanksgiving and commemoration of founders and benefactors, which was held in the Abbey. A procession of representatives of the hospital, headed by the porter, followed by the medical school, the nursing staff (to the number of ninety), the house staff, the administrative staff, the officers of the hospital, the lecturers of the medical school, the visiting medical staff, the house committee, the treasurers, and others, made a picturesque line, hoods and orders and uniforms being worn. The Mayor and Corporation of Westminster also attended. Bishop Ryle, Dean of Westminster, conducted the service, and instead of a sermon read the commemoration, recalling, with gratitude, the bounties which had led up to the present foundation. Afterwards the Te Deum was sung.

## THE STAR AND GARTER HOME FOR PARALYSED MEN.

AT an early stage of the war it was realized that it would be necessary to make special provision for the men whose wounds had produced paraplegia or other forms of permanent paralysis. In the autumn of 1915 the Auctioneers' and Estate Agents' Institute raised a fund and bought the old Star and Garter, at Richmond, on a beautiful site overlooking a famous reach of the Thames. The late Sir Frederick Treves took great interest in the project, and the building was soon equipped and taken into use. Although it served the purpose in an emergency it was not really well adapted for it, and it was decided that no structural alterations of the building could make it a satisfactory permanent place for the reception of paralysed men. The British Women's Hospital Committee took the

matter up, and with the assistance of the Navy League, the British Farmers' Red Cross Fund, the Meat and Allied Trades' Red Cross Fund, and the United Province of India (War) Fund, raised sufficient money to rebuild the hospital. Sir Edwin Cooper gave his services as architect, and Sir Arthur Stanley had the satisfaction of announcing to the King and Queen when they visited the new building last week that it had been opened free of debt. It supplies accommodation for 180 men, and there is also a house at Sandgate, to which patients for whom sea air is desirable can be sent. The Mayor of Kensington presented an address to the King, who in reply expressed his deep sympathy with the patients and his high appreciation of the efforts of those who had made the erection of the home possible. Dame May Whitty, chairman of the British Women's Hospital Committee, traced its history from its formation in July, 1915, and said that the total sum actually paid over as the result of its efforts was more than £220,000. The title-deeds were then handed, amid loud cheers, to the Queen, and afterwards Their Majesties made a tour of all the departments, including the operating and *x*-ray theatres. Finally, twelve men, in their reclining couches and wheeled chairs, were brought to the entrance to witness the departure of Their Majesties, who spoke to each man, shaking him by the hand. It may be remembered that during the war Lady Parker of Waddington made an appeal for a special memorial to four R.A.M.C. officers who died while treating British prisoners during the terrible typhoid outbreak at the prisoners' camp established by the German authorities at Wittemberg. Out of the funds subscribed a room has been built in the Star and Garter Home, and a tablet fixed to its wall on which the names of the R.A.M.C. officers are recorded.

## NATIONAL PHYSICAL LABORATORY.

THE publication of the annual report of the National Physical Laboratory (1923)[1] has followed hard upon the annual inspection, of which we gave some account a few weeks ago (June 28th, p. 1161). The report shows that there has been a steady growth of the work the laboratories have been called upon to do. This has been due in particular to the requirements of other Government departments, submitted through the Co-ordinating Research Boards of the Department of Scientific and Industrial Research. Owing, it is believed, to the general business depression, there was a slight falling off in the work for firms as compared with the preceding year, but towards the end of the year it showed a tendency to increase. Much of the work done, though of fascinating interest, has no direct connexion with medicine. Such work, for example, as the application of *x* rays for the detection of flaws in metals has a far-reaching commercial importance, and may eventually solve many of the difficulties which at present entail risks of accident. Radiographs will show the presence of flaws in metal structures up to 4 centimetres in thickness, but they do not detect fine flaws. The most valuable piece of work from the medical point of view is that dealing with the *x*-ray installations of hospitals, with special regard to the protection of the workers. Protective tube boxes, if constructed of lead, have to be of dimensions sufficiently generous to prevent sparking between the bulb and the box. If, however, the tube box is required to be in close proximity to the bulb, it commonly takes the form of a lead glass bowl, or alternatively a wooden box with several layers of lead-rubber lining or wrapping. The open glass bowl is not satisfactory; it is constructed of lead glass, usually affording a total protection of from 0.5 to 0.7 mm. of lead; but in many directions, owing to its design, it affords no protection whatever. Where this type of shield is alone employed it is often possible to take a radiograph of the hand in any part of a room where a tube is working. The bowl should be provided with some kind of cover and the material increased in effectiveness. The type of hemispherical shield supplied for Coolidge tubes is much better in that it completely encloses the tube. The whole of the report of the *X*-ray and Radium Protection Committee, of which Sir Humphry Rolleston was chairman, is worthy of careful study by workers in radiological departments.

[1] The National Physical Laboratory, Report for the year 1923. London: H.M. Stationery Office, or through any bookseller. (Pp. 228. 13s. 6d. net.)

## THE MEDICAL WOMEN'S INTERNATIONAL ASSOCIATION.

THE Medical Women's International Association has been meeting in London this week. The reception room was opened at the Royal Society of Medicine on the afternoon and evening of Monday, and on Tuesday, morning and afternoon, council meetings were held. Miss Aldrich-Blake entertained a party at luncheon at the London School of Medicine for Women, there was a tea party at Lambeth Palace by the invitation of the Archbishop of Canterbury and Mrs. Davidson, and private receptions in the evening. On Wednesday morning there was a general meeting of the Medical Women's International Association, followed by luncheon at the Botanical Gardens. In the afternoon the visitors, who represented seventeen countries, were received at the Royal Free Hospital, which is claimed to be the mother hospital of medical women, since it was the first general hospital to admit women students to surgical and medical training in its wards. It was announced that the American Women's Hospital and American friends had decided to endow a bed in the hospital in memory of Dr. Elizabeth Blackwell, the first Englishwoman to obtain a medical degree, which she took in America because it was not open to her to do so in England. In the afternoon a reception was given by the Prime Minister and Miss Ishbel MacDonald at 10, Downing Street. On the morning of Thursday, July 17th, there was a discussion on maternal morbidity, its causes and prevention. In the afternoon the members took tea at the House of Commons by invitation of the Prime Minister and other members of Parliament, and in the evening the British Medical Women's Federation gave a banquet to the foreign members attending.

## CONVENTION OF ENGLISH-SPEAKING OPHTHALMOLOGICAL SOCIETIES, 1925.

THE Ophthalmological Society of the United Kingdom, together with its affiliated societies, has decided to hold in London in 1925 a Convention of English-speaking Ophthalmological Societies and Associations, from July 14th to 17th inclusive. Invitations have been sent to the presidents of all such bodies in the different parts of the British Empire and the United States of America asking them to appoint official delegates. The convention will be opened by a reception given by the President and Council of the Royal College of Surgeons of England on the evening of July 13th at their house in Lincoln's Inn Fields. Four mornings, two afternoons, and one evening will be devoted to the scientific work of the convention. After a reception of delegates there will be an address by the President (Mr. E. Treacher Collins, F.R.C.S.). The Bowman Lecture will be delivered by Sir John Parsons, F.R.S.; there will be a discussion on the microscopy of the living eye, and a symposium by selected speakers on the evolution of binocular vision. Visits will be made to various institutions of ophthalmic interest, and there will be a banquet, a garden party, and other receptions. The registration fee for those who are not members of the Ophthalmological Society of the United Kingdom will be £2, and for ladies accompanying members of the convention who wish to become associate members, 10s. The general secretary is Mr. C. B. Goulden, O.B.E., M.Ch., F.R.C.S., 42, Welbeck Street, W.1.

## THE MEDICO-CHIRURGICAL SOCIETY OF BOLOGNA.

THE Medico-Chirurgical Society of Bologna celebrated its centenary on June 10th, and among the institutions which sent congratulations to it on the occasion was the British Medical Association. As permanent memorials of its first hundred years the Society has struck a medal (here illustrated) and has issued a very fine volume containing over 1,000 pages and numerous illustrations.

The Society had its beginnings as a private organization in 1802, but was formally constituted by a bull of Leo XII promulgated in August, 1824. It suffered, in common with most institutions in Italy, during the revolutionary movements which followed, but in spite of some interruptions has continued its scientific labours down to the present time and with renewed vigour since 1880. During its century of existence it has gathered about it many memorials of its distinguished members, which are piously preserved in its house, a fine old building with an arcaded courtyard.

The first part of the volume is a history of the Society, written by Lino Sighinolfi, with addenda by various hands, giving lists of names of publications by members of the Society, and of medals in its possession. There is a special chapter on the Bolognese school of surgery, which includes an account of the foundation of the orthopaedic institute to commemorate the great services of Professor Rizzoli. Among the illustrations are photographs of the room in which the Society meets, of a special room devoted to memorials of illustrious members who have passed away, and of the library and reading room, a very fine apartment ornamentated by frescoes and many busts.

The second part contains a series of reviews of the contributions of Bologna, and of its Medico-Chirurgical Society in particular, to the progress of medicine. Among the articles in this part is one by Gino Rava on Jennerian vaccination; it mentions that a translation of Edward Jenner's *Inquiry* (1789) was published in Italy in 1800, and recalls the interest Napoleon immediately showed in the subject. The Bolognese Society soon afterwards gave special attention to the matter. It fully appreciated the importance of Jenner's discovery, consecrated the room now used as a library as a memorial to him, and eventually established a special commission on vaccination. The final article in the volume gives an account of the interest the Medico-Chirurgical Society has shown in veterinary medicine. The commemorative medal here reproduced is a beautiful specimen of the numismatist's art, which reproduces, as we gather, the seal of the Society; as will be seen, it shows the staff of Aesculapius in an unusual position; but it brings out very clearly its rough hewn form. We called attention a short time ago to the significance of this.

## THE HEALTH OF SCOTLAND.

THE Annual Report of the Scottish Board of Health[1] for 1923 presents features of exceptional interest and importance. It contains six heads: (1) sanitation; (2) medical and allied services; (3) national health insurance; (4) housing and town planning; (5) Poor Law and public assistance; and (6) miscellaneous.

In a brief introduction it is said that though the general policy of economy has prevented all but the most urgently necessary developments in the health services, yet reductions of local expenditure have not necessarily meant equivalent reductions in efficiency, and some services have been not only maintained but improved. The general death rate in 1923 was 12.9 per 1,000 of population, this being, for Scotland, the lowest on record, the previous minimum having been 13.6 for 1921. The Board does not attempt to analyse the causes of the reduction, "but the improvement has marched with the development of the social conscience on health," and one of the main factors has been "the expression of that conscience in the measures which the community has taken to prevent disease." Infantile mortality in 1921 was 90.3 per 1,000 births (the lowest rate up to that time), and in 1922 it was 101.4, but in 1923 it fell to 78.9, which constitutes a very striking diminution, though the Board, with wise if not divine discontent, does not regard even the new minimum as satisfactory.

### *Comparative Mortality of England and Scotland.*

Last year (BRITISH MEDICAL JOURNAL, vol. ii, 1923, pp. 528 and 540), basing our remarks on the valuable report for 1922 of Dr. A. K. Chalmers, M.O.H. Glasgow, we made some observations on the higher general death rate of Scotland as compared with England, and on the differences, unfavourable to the northern kingdom, of the rates in the great cities of the two countries—London, Birmingham, Manchester, and Liverpool on the one hand, and Glasgow, Edinburgh, Dundee, and Aberdeen on the other. Particular attention was called to the changes in infant mortality north and south of the Tweed—how, looking back through sixty years, England for long had a definitely higher death rate than Scotland, how there has been in recent times a gratifying lowering of the rates in both countries, and how the fall has been much more notable in England. In 1861-70, England had 154 deaths per 1,000 births, and Scotland only 121; when figures for 1911-20 are compared, England has for the first time a lower rate than Scotland, the respective figures being 106 for Scotland and 100 for England. In calling attention to these facts our purpose, as stated, was to ask questions, not to answer them, and to suggest that there is abundant occasion and opportunity for valuable research into the health problems of Scotland.

Students of vital statistics will find with pleasure in the new volume of the Scottish Board of Health a thoughtful and suggestive study of this subject. It is noted that for the purposes of the Registrar-General's reports, England and Wales are divided into North, Midlands, South Wales, and London. The North is composed of Cheshire, Lancashire, Yorkshire, Durham, Northumberland, Cumberland, and Westmorland. This area, it is pointed out, is in many respects capable of fair comparison with Scotland, including climatic and other conditions. In respect of infant mortality the county boroughs of North England are contrasted in the Board's report with the larger burghs of Scotland, the urban districts of North England with the smaller burghs of Scotland, and the rural areas of North England with the county districts of Scotland. In the first and second of these three compared groups, it is agreed that there has been a more rapid decline in North England than in Scotland, but the original level was higher, whilst in the third group it is claimed that on the whole the county districts of Scotland compare favourably with the rural districts of North England. The English Registrar-General's Report for 1920 is quoted to show the differences of mortality between north and south of that country, and that "the constancy as well as the degree of the decrease in mortality from the north to the south of England is very great." The importance of these considerations and their relevance to health comparisons between the two kingdoms are manifest, though they do not, of course, exclude other factors—housing, overcrowding, standards of cleanliness, temperance, and so forth. Incidentally, indeed, they deepen the mystery why Scotland, under its climatic disadvantages, should until quite recent years have had a lower infant mortality than England as a whole, and why,

[1] H.M. Stationery Offices. 1924. (Med. 8vo, pp. 274. 8s. net.)

the climate being unchanged, the relative position of the two countries should be so altered notwithstanding all the excellent work that is being done in Scotland (as well as England) for child welfare.

Dealing specially with infant mortality in Scotland the report calls attention to observations by the English Registrar-General on the influence of temperature—"Whatever tends to protect the newborn as well as the older infant against the added risk of winter will evidently tend to reduce mortality"—and the Board goes on to point out the importance of remembering this statement when the death rates in the colder northern latitudes are compared with those further south. On this point we are given a careful analysis of the mortality at different periods of infant life—under one week, under one month, under three months, three to six months, and six to twelve months. Under one week the deaths in the two countries run much on the same level, and that statement applies also to the total under one month. "The late Dr. Ballantyne," it is noted, "looked upon the first month of life as rather a continuation of the pre-natal life than a beginning of the post-natal life." From one to three months the death rate in both countries shows a very slight tendency downwards. From three to six months the tendency is quite definitely downwards, though in the last two years the English decrease is somewhat the more rapid, and this remark is emphasized for the period six to twelve months. In concluding its analysis the Board says: "In this detailed comparison England has little advantage in the earlier periods, a recognizable advantage in the middle period, and a distinct advantage in the last period. The levels in England seem now to be shifting more rapidly than the levels in Scotland. Probably this means that the leading causes of death in England are more variable and depend upon more manageable factors."

*Unemployment and its Effects.*

Another subject of present-day interest is a survey of unemployment and its effects. The Board's inspecting staff, including its medical officers, was instructed to make special inquiries as to the effects of the prolonged period of unemployment on the physical welfare, morale, and technical skill of the workers, and on the effect of idleness as reflected by increase in crime or social unrest. The persons consulted included employers, officials of trade unions and of local authorities, medical officers, chief constables, ministers of religion, and persons engaged in the administration of voluntary funds. Though different views were expressed the Board thinks that a reasonably true picture can be presented. The number of insured persons totally unemployed or on systematic short time was, over all industries, fully 13 per cent. of the work-people of Scotland, the worst rate being in ship building and repairing, where 39 per cent. were unemployed. On the other hand, employment in the coal industry was particularly good. Opinions as to physical welfare were based mainly on impressions formed in attending patients at home or in hospital, and also on statistical data obtained in the examination of school children over a series of years. The view, both lay and medical, is that the measures for relief of unemployment have prevented any widespread physical distress. The position has been much more satisfactory than in previous severe trade depressions, especially in the case of unskilled and casual workers who have had available, like the rest, a regular weekly income sufficient to procure the necessaries of life. Nearly all medical opinions refer to improvement in physical condition resulting from this regularity of income. Skilled artisans have suffered more owing to their greater reluctance to apply for relief. While undernourishment of the family has been preventable, distinct signs of nervous strain have been noted, owing to depression of the husband on account of the apparent hopelessness of the position, while the wife becomes depressed through anxiety for her husband. In the Clyde Valley a rapid medical survey led to the following view regarding children under school age and their mothers:

"Summing up the position as a whole with regard to the physical condition of mothers and children in the three areas in which we have been able to make inquiry in the time at our disposal, it seems that, among the class of mother that attends the child welfare centres, there is a lower standard of health and less satisfactory clothing than in former years. Children under 1 year do not appear to have suffered. In Glasgow and Paisley the children between 1 and 5 are apparently less well nourished and clothed than in previous years, but in Lanarkshire and, so far as we could ascertain, in Renfrewshire (exclusive of Paisley) they do not appear to have suffered to any appreciable degree."

In children of school age the weight and height are not so good in 1923 as they were in 1920, but as to nutrition, strange to say, and at the same time gratifying, "The striking fact brought out by the table on nutrition is the steady diminution, among both boys and girls, of the numbers classified as suffering from 'Bad' and 'Very bad' nutrition, and a corresponding increase in the numbers classified as having 'Good' and 'Fair' nutrition. The percentage of 'Bad' and 'Very bad' taken together was in 1920 approximately 15, and in 1923 approximately 5.3." Similarly, in clothing and footgear there is actually an improvement in 1923, as compared with 1920, an improvement which has been steady throughout the four years 1920-23, and no practical change is observable in 1923 as to state of repair and cleanliness. Concerning the discrepancy between loss of height and weight on the one hand, and improved nutrition on the other, the Board is inclined to attach more importance to the exact tabulations of the former than to what are necessarily the personal impressions of observers as to the latter, though they are disposed to think that the reduction in the number of children of "Very bad" nutrition is a reality due to regularity of income. School medical reports, however, show a tendency towards increase of minor ailments (enlarged tonsils, adenoids, etc.), and, balancing all the data, the Board concludes: "It would appear that, while there were in 1923 fewer children suffering from actual malnutrition than in 1920, the evidence as a whole points to a slight falling off in vitality and physique, though such evidence as is forthcoming is not very striking."

Following discussion of effects of unemployment on physical welfare, the Board, in a series of interesting paragraphs, considers its effects on the technical skill of workers, on morale, on the exhaustion of private savings and of trade union benefits, and on social unrest and increase of crime. These subjects, however, are not specially appropriate to a medical journal and their discussion is forbidden by want of space.

*National Health Insurance.*

The following notes, taken from the section of the report dealing with this subject, will be of interest to insurance practitioners.

*Consolidation of Acts Needed.*—The Board regrets that the National Health Insurance Acts have not yet been consolidated, but a bill has been drafted, and it is hoped that Parliament will be in a position to deal with it soon.

*A Misunderstanding.*—Insured persons whose money benefit is discontinued after examination by a district medical officer frequently fail to realize that the decision to discontinue benefit is that of their society and not of the medical officer, who merely advises. Some societies are in part to blame for this misapprehension. In their desire to avoid dissatisfaction the intimation to discontinue benefit is so phrased as to imply responsibility on the part of the medical officer. The Board regrets that any societies should act in this fashion.

*Additional Benefits.*—Dental benefit is becoming very popular and much sought after. An erroneous impression is widespread that it is universally provided, and complaints arise on its refusal. Mitigation of the alleged grievance is largely in the hands of societies who do not provide such benefit, but a number of them are financially unable to do so. The amounts available per annum for the purpose of additional benefits, and the number of centralized societies and branches giving such benefits, are as follows: hospital and convalescent homes, £14,255, by 12 societies and 27 branches; dental benefit, £15,227, by 16 societies and 8 branches; nursing, £3,830, by 5 societies and 12 branches; optical, £4,897, by 11 societies and 10 branches; medical and surgical appliances, £3,173, by 6 societies and 9 branches; other additional benefits, £4,200, by 2 societies and 1 branch. Some societies and branches desirous to provide dental benefit, but unwilling to do so by trenching on additional benefits already given, have taken advantage of Section 21 of the 1911 Act to make donations to "charitable institutions," which in return provide dental benefit. The full extent of such arrangements is not known, but (in Scotland) 14 societies with a membership of 180,000 do so, and some 40 societies besides have subscribed to voluntary hospitals and nursing associations to the amount of about £16,000 in the year, the expenditure being sometimes in excess of the sums disposable for the purpose. The societies have been warned accordingly.

*District Medical Officers.*—The district medical officers' scheme is being increasingly resorted to by societies, the number of cases referred by them having increased from 16,618 in 1922 to 19,000

in 1923. In addition 297 cases were referred by practitioners. Of the total cases, the opinion of the certifying practitioner was upheld in 44 per cent., reversed in 23 per cent., and 33 per cent. were not examined, 13 per cent. having declared off before examination, 16 per cent. failing to attend, whilst 4 per cent. are described as "other cases." In the Highlands and Islands the Board's own headquarters staff carries out this work as opportunity offers, 240 cases having been examined in the year. Excluding the Highlands and Islands there are five districts, and the five officers have made progress in establishing friendly and helpful relations with panel committees and insurance practitioners, a growing desire being manifested to obtain their advice.

The experience of the district medical officers is briefly to the following effect:

1. The standard of certification is improving, but numerous cases of laxity still come under notice.

2. There is great diversity in the range of treatment. The work of many practitioners is of the very highest quality, but in some isolated instances the care and attention given seem definitely below the average of the service.

3. There is urgent need for increased hospital accommodation for the insured, though the fullest advantage is not always taken by practitioners of the availability of specialist advice at these institutions.

*Complaints.*—Formal complaints against practitioners have been even fewer than in previous years. In six instances complaints were lodged by societies as to irregularities in certification, but the offences were generally not serious, and the total grant withheld was only £28 8s. Failure to attend was found in three cases and the sums withheld amounted to £175. In one of the cases prescriptions had been issued without seeing the patient. In two cases the list numbers were in excess of the prescribed maximum without an assistant, and £155 was withheld. One other case involved an inquiry which resulted in the practitioner's name being removed from the Insurance Committees' medical lists and in the facts being reported to the General Medical Council. The offence consisted mainly in the lax issuing of certificates and prescriptions, the filling in of these forms being left on occasion to the discretion of the practitioner's clerkess.

Two appeals were taken by practitioners against insurance committees; one was allowed and the other dismissed. Two appeals were taken by societies against the decision of Insurance Committees on complaints against practitioners regarding certification; one was sustained and the other dismissed. An appeal by an insured person against the decision of an Insurance Committee in dismissing a complaint against her panel doctor was dismissed.

*Necessitous Districts Grant.*—The grant for necessitous districts in the Lowlands (which are really Highland localities outside the boundaries of the area technically constituting the Highlands) was devoted to various purposes—to payment of practitioners for undertaking necessary removals to hospital, subvention of income, means of conveyance, maintenance of dispensaries in remote places, and difficulties of access. With regard to one item, the Board writes: "We have been impressed with the importance of medical practitioners keeping in touch with the latest developments in the science of medicine, and resolved as an experiment to afford certain practitioners living in the more remote districts the opportunity of taking a post-graduate course of study in general medicine. Of the doctors whom we approached three were able to attend a course arranged by the University of Edinburgh. In expressing their recognition of the facilities which were afforded they reported that the instruction had been of the greatest benefit to them." This is a departure of much interest, and its development will be well worth watching.

In conclusion, without making any mention of the other important matters dealt with in the volume—not even of Housing and Poor Law, nor of an interesting memorandum by Sir Leslie Mackenzie on the relation of weather in the Hebrides to present social and economic conditions—it is permissible to congratulate the Scottish Board of Health on the whole scope and value of its report for 1923.

## SMALL-POX IN CANADA.

### THE STAMPING-OUT METHOD IN ACTION.

THE BRITISH MEDICAL JOURNAL of March 29th of this year (p. 584) reproduced a circular issued by Dr. John W. S. McCullough, chief officer to the Provincial Board of Health of Ontario, on the subject of an epidemic of very severe small-pox—in many cases haemorrhagic—in the border cities of Canada. The disease was still current at the date of that circular. The story has now been completed in a report by Dr. F. Adams, D.P.H., medical officer of health for the Essex Border Municipalities. The total number of cases was only 67. Of 45 who had never been successfully vaccinated 32 died. Of 10 who had been successfully vaccinated years before, and of 12 others successfully vaccinated in the incubation period, all recovered.

The extraordinary severity of the disease—not its mildness, as in this country at present—made diagnosis exceedingly difficult, and the story of the manner in which it was stamped out is graphically told by Dr. Adams. There are six border cities, and their combined population is about 70,000. The Board of Health is composed wholly of doctors, each of whom had been at some time a medical officer of health. When the danger became apparent to them they met on a Saturday night, and first of all provided for the care of the sick and the maintenance and supervision of families in quarantine. Being unanimously of opinion that the one thing which would stamp out the epidemic was wholesale vaccination, they proceeded as follows:

"Then and there three of our nurses using three 'phone lines called up every doctor in the Border Cities that could be reached, and asked him if in the emergency he would consent to vaccinate any person who came to his office free of charge, it being understood that the Board of Health would supply vaccine and pay for vaccinations at the rate of 25 cents apiece. Within half an hour we had the consent of about three-fourths of our doctors. The rest could not be reached, but we assumed their consent and telephoned them Sunday morning. Before midnight a statement of the situation was prepared and sent out to every clergyman in the Border Cities, with a request that it be read from the pulpit at every service on Sunday. The gist of the announcement was that an epidemic of exceedingly severe small-pox was present in the Border Cities, that there had already been a number of deaths, and that everyone was advised to be vaccinated at once and to have all the members of his household vaccinated; finally, that arrangements had been made with every doctor in the Border Cities under which he would vaccinate anyone who came to his office free of charge. On Sunday, at our request, the secretary of the Chamber of Commerce called up every large employer of labour in the Border Cities, explained the situation to him, and asked him to urge vaccination upon all his employees Monday morning. Monday afternoon a full page advertisement of the Board of Health, setting forth the situation, appeared in the local paper. The effect of these measures was all that we could have asked for. There are some seventy doctors in the Border Cities, and we had simply created seventy free vaccination stations. The doctors' offices began to be crowded with applicants for vaccination on Sunday morning, and within the next six days we estimate that well over 95 per cent. of our population was vaccinated. There was nothing compulsory about any of our methods. We simply took the public into our confidence, told them the situation as it really was, advised general vaccination, and made provision for it without charge. The antivaccinationist, usually so noisy and troublesome, gave us no trouble at all. As far as checking the epidemic was concerned, the effect of these measures was a hundred per cent. perfect. We had one big splash of cases and then silence, and that silence has continued without interruption right up to the present moment—almost three months."

Dr. Adams's report as to the small-pox cases is not confined to statistics, but contains many details of human interest. Here are some of them:

"In Windsor there is a family named M., consisting of ten persons. All of them were exposed to small-pox and about equally. Nine of them had been vaccinated successfully in previous years and none of these contracted small-pox. The tenth person had never been vaccinated, contracted the disease and died inside of four days of the haemorrhagic lobster rash type of small-pox.

"During the epidemic we had to employ a large number of nurses to look after the sick and we had also to expose to the disease orderlies, ambulance drivers, clergymen, and others. We made it an absolute rule that no one should be exposed to small-pox through our action unless that person had a vaccination scar already and was also freshly vaccinated by us. The result of this precaution was that not a single person who was exposed to the disease through any action on our part came down with small-pox.

"Of course, when a case of small-pox developed in a household we vaccinated every other person in the house. Contacts of this kind, which in Maidstone, Amherstburg, and the Border Cities run into the hundreds—all, as far as I know, escaped small-pox as a consequence of timely vaccination.

"Mrs. J. D. of Walkerville, 52 years of age, never vaccinated, developed small-pox and died after an illness of eight days. Her husband, with a history of exposure many times in excess of that of his wife, had a trifling attack of small-pox. He had been successfully vaccinated twelve years ago.

"The proprietor of a laundry came down sick with small-pox, and on investigation it was found that out of a total staff of twenty-five persons at the laundry he alone was unvaccinated, and he was the only one who contracted the disease.

"A. D., aged 50, and his son R. D., aged 25, neither having been successfully vaccinated, died of small-pox. Mrs. A. D., vaccinated successfully thirty-two years before, took small-pox also, but it was a trifling illness.

"G. D., the man who had the original illness that was small-pox but was not diagnosed as such, had a daughter Josephine, 12 years old. She was exposed to her father through the whole course of sickness and later on to her mother and aunt, who developed small-pox, *but she has not had one single day's illness herself.* Six years ago she was vaccinated to go to school, and she has on her left arm a scar about the size of an old-fashioned Canadian five-cent piece. Twenty-one close relatives of this little girl, all unvaccinated, are dead of small-pox."

Dr. Adams concludes as follows:

"It is when one has had close personal experience with incidents such as these, when one has had to send nurses by the dozen up against the most virulent small-pox with nothing to protect them except vaccination, and they nurse the disease week in and week out without contracting it, when one has seen a community of thousands of persons threatened with decimation by small-pox and one has seen wholesale vaccination pull the disease up short and weeks and weeks go by without any fresh cases at all, then and then only does one fully appreciate the marvellous gift which Jenner made to science and to humanity."

Dr. Adams and his colleagues of the Border Cities Board of Health are to be congratulated on their triumph over virulent small-pox; so also are the clergymen who intimated the position from the pulpit, the employers and employees and the public generally who accepted the advice that was given them, and the seventy doctors who vaccinated, as estimated, over 95 per cent. of the population within a week. Under the same measures the same result can be achieved to-day in respect of the mild small-pox which continues to prevail in Middlesbrough, Chesterfield, Derby, and wherever else the disease exists in Britain.

## THE ROYAL SANITARY INSTITUTE CONGRESS AT LIVERPOOL.

THE thirty-fifth annual Congress of the Royal Sanitary Institute opened in Liverpool on July 14th, when some 1,250 delegates from all parts of the world were in attendance.

*President's Address.*

The presidential address was delivered in St. George's Hall by the MARQUESS OF SALISBURY, K.G., who spoke on the progress of sanitation within the last three-quarters of a century, and its bearing on the housing question, to which he devoted considerable attention. The Factory Acts, National Health Insurance, and the extensions and improvements of hospitals and sanatoriums represented a solid achievement. A great benefit had been conferred on child and on adult as far as their life outside the home was concerned, but the clamant question now was—In what kind of houses did they live? A great debt of gratitude was due to the pioneers of the garden city movement, and in all housing schemes we could not do better than follow their good example, and thus avoid the mistakes of the past. He thought every house should be provided with three bedrooms if overcrowding was to be prevented. Municipalities should own a number of assorted houses. Dry walls, smokeless chimneys, window sills low enough for the womenfolk to view the street from their chairs were essential comforts. The necessity of a parlour he questioned, and thought that if the occupier required one the rent should be increased. Our forefathers, from the highest to the lowest, did not believe that bathrooms were essential, and he ventured the diffident suggestion that in this matter we ought not to go ahead of public opinion of the locality. In proportion as housing was made unduly expensive, provision essential from a sanitary point of view might be difficult if not impossible to secure. In conclusion, Lord Salisbury emphasized the importance of a spiritual ideal being constantly kept before the public mind. Sanitary perfection alone would not produce the best examples of human nature.

The Vice-Chancellor of the University (Dr. J. G. ADAMI), in proposing a vote of thanks, alluded to the work accomplished by the medical officer of the city (Dr. E. W. Hope), who, on the eve of his retirement from the post, could look back with pride on the disappearance of slum areas which at one time had made the city a byword. Dr. Adami also pointed out that Liverpool was the first university to set up a department and professorship of civic design and town planning. Dr. S. MONCKTON COPEMAN (Ministry of Health) seconded the proposition, which was supported by Surgeon S. L. CHRISTIAN (United States Public Health Service) and Mr. H. P. MODE (President of the Corporation of Bombay). Lord SALISBURY, amid the acclamation of a large and representative gathering, acknowledged the thanks in felicitous terms, and wished the Congress every success.

There are five sections: Sanitary Science, Engineering and Architecture, Maternity and Child Welfare, including School Hygiene, Personal and Domestic Hygiene, and Industrial Hygiene. In addition, conferences are arranged: for representatives of sanitary authorities, port sanitary authorities, medical officers of health, engineers and surveyors to sanitary authorities, veterinary inspectors, sanitary inspectors, and health visitors.

*The Sections.*

The President of the Sanitary Science Section (Lieutenant-General (Sir WILLIAM LEISHMANI delivered his address, on the relation of pathology to preventive medicine, on July 15th. He thought that at present the relation between these two important subjects was not as intimate as it used to be, and the benefits derived from such intimacy were nowadays not accruing to their mutual advantage. In military affairs it was far easier to preserve this relationship than in civil life. The fascination of pathological research was so engrossing that side issues or observations made by the hygienist were apt to be overlooked or their importance not fully appreciated. The test tube was not a town, and unwarranted optimism might be avoided were the pathologist in closer touch with the practically minded hygienist. Team work between the two exponents would be the best solution of many of the difficulties. The trained bacteriologist might with advantage be more intimately associated with the public health authority in matters connected with isolation, disinfection, sewage disposal, water supplies, and the control of epidemics and epizoötics. Active pathology was as much concerned with the investigation of the mysterious beginnings of disease processes as with the effects which they ultimately produced on the body.

*The Health Exhibition.*

The exhibition of the Congress was opened by the Lord Mayor of Liverpool on July 14th, who described it as a "Wembley of Health." The Liverpool Corporation Health Department shows by models, charts, photographs, and other illustrative methods, what has been accomplished in clearing away insanitary areas, in the erection of municipal dwellings, and the waging of relentless and increasing war upon rats. The Electricity Department shows for what domestic purposes electricity can be used by a household. The Liverpool Gas Company vies with its competitor in attaining the same happy results in making domestic duties attractive. Food and drink occupy a considerable space in the exhibition. Foods for the young, middle-aged, and old, and various kinds of clothing, invalid furniture easily manipulated, disinfectants for personal and general use, are to be seen by all interested in sanitation. In short, everything that makes for health and comfort—personal and general—is displayed, and the exhibition is well worthy of more than one visit.

# England and Wales.

### SMALL-POX IN LONDON.

No further cases of small-pox have occurred in the London area since we last referred to the subject on July 5th. Although it is yet too early to speak positively, there seems good reason to hope that the preventive measures we described have been successful in checking the spread of the disease. There were ten cases in the Willesden area, all members of two families in one house; three deaths occurred. There was also one case in Kensington. The eight surviving patients are all reported to be progressing favourably. The origin of the outbreak has not been traced. It may be that the infection, conveyed in some undiscovered manner to the most unprotected member (a boy of 3) of the two families was derived from a case of a mild type now prevalent in the North and Midlands of England, and suddenly developed a degree of virulence sufficiently high to kill three persons with haemorrhagic small-pox. On the other hand, it is conceivably possible that infection of a severe type was passed to the original patient from one of the sources of infection recently imported from the East. The fact remains that the outbreak occurred in a small-pox-free area without the slightest warning, thus emphasizing once more the necessity for the vigilance which is continually maintained by the respective preventive services.

A striking feature of the outbreak was the defencelessness of the people attacked. Nine members of the two families were closely exposed to infection from the original case and all nine of them took the disease. That is an indication of the catastrophe which an epidemic would mean. The task of protection assigned to the public health officers, with which virtually the whole medical profession is now associated, is therefore most onerous and can hardly succeed without an ample measure of public support.

Another lesson is the renewed evidence of the value of vaccination. Every outbreak, of course, gives this. It is one of the strangest instances of the ineptitude of those who deny any value to vaccination that every single outbreak of small-pox that occurs—and there have been well over 4,500 cases in

the last eighteen months—gives conclusive evidence of the protective influence of vaccination. Here is a case of small-pox of severe type and a committee of civic representatives who are responsible for dealing with it, a committee containing staunch antivaccinators. What is the committee going to *do*? The stricken patient cannot be left unattended. Who is to nurse him? For a bad case it may be necessary to send six nurses—two for day duty, two for night duty, and two others to be ready to relieve. And it is practically certain that if six nurses unprotected by vaccination be so sent to a case of virulent small-pox several of them will have attacks, moderate or severe, two of them probably very severe, from which one may possibly recover with her face scarred, disfigured for life, and one will die. When that has happened there will be seven patients instead of one waiting to be nursed, and the committee will again be faced with the question, What is it going to do? Is it now going to send six more unvaccinated nurses, and then six more, until enough of them have recovered to carry on with their duties? The fact is that when antivaccinators have to tackle a problem like this on the spot they realize at once that they must bow to the truth and either order or, to save their faces, permit the employment of vaccination. That is what happens again and again. When it is considered that this applies not only to nurses, but to doctors, disinfectors, sanitary inspectors, health visitors, and all the relatives and friends, it becomes obvious how every outbreak of small-pox—in the suppression of which vaccination is absolutely the sheet anchor—furnishes evidence of the protective value of vaccination.

A further lesson from this June outbreak lies in the fact that there is absolutely no knowing to what member of our profession will come the sudden summons to answer the question, "Can this be small-pox?" Every single case, at any stage, has to be recognized by every practitioner who sees it, immediately. That is our task at present if small-pox is to be kept out.

There is also this reflection for the lay directors of the public health: the exceedingly narrow margin of safety which they permit to exist between a condition of things in which small-pox is absent, and therefore out of mind and imagination, and a suddenly supervening condition of disaster to important interests, such as a business, school, watering-place, or other big concern completely wrecked by small-pox. Common business prudence requires that employees should be properly protected by vaccination and revaccination to the satisfaction of responsible officers, as is done in the English Post Office service and other enlightened industrial or business institutions.

Last, but not least, is the lesson for the respective preventive services which centre round the officer upon whom the main responsibility for prevention falls—namely, the medical officer of health. He requires all the support, help, and co-operation that can be given; for he forms the central pivot in the medical administration which alone safeguards the whole community at present from the calamity of a small-pox epidemic.

### SMALL-POX IN THE PROVINCES.

In the BRITISH MEDICAL JOURNAL of May 10th (p. 826) the weekly prevalence of notified small-pox for the first third of the year was summarized. The Registrar-General's reports now yield the figures for the first twenty-six weeks—down to June 28th, or the first half of the year. For the last nine weeks of the period the returns of notifications were 132, 82, 116, 101, 75, 69, 56, 58, and 65, a total of 754, which, added to the 1,424 for the first seventeen weeks, gives 2,178 for the half-year. In the whole of 1922 the cases in England and Wales numbered 973, and in 1923 they totalled about 2,500. There is, therefore, no indication of decline, but rather of increase, though in the last three or four weeks a downward tendency is visible. A disturbing factor is the occurrence within the last week of the period of the outbreak of severe type at Willesden, close to London, as reported in the JOURNAL of July 5th. In the provinces generally, the areas principally affected remain more or less as before. In Cumberland the infection has obtained no serious hold, and the outbreak is being kept well in hand. The large towns chiefly affected in the North of England are Chesterfield with 169 cases in the last nine weeks of the half-year, and Middlesbrough with 97. The county borough of Derby has had 48 notifications in the last seven weeks. The disease continues with remarkable persistence in Ashington in Northumberland, where there have been in the nine weeks 85 cases, and it is not yet eradicated from Hucknall in the county of Nottingham.

### HEALTH OF LONDON.

A volume, containing the reports for 1923 of the Medical Officer of Health and School Medical Officer, London County Council, has been issued.

Sir William Hamer, in his report as medical officer of health, states that the year 1923 was remarkable for having the lowest death rate (11.4) ever recorded in London. The infant mortality rate was even more exceptional, as it was only 61 per 1,000 births—a considerable fall from the rate of the preceding year (75), which was itself a record rate. The comparatively low mortality from influenza, bronchitis, and pneumonia, the low rate from measles, and the improvement as regards the rates from scarlet fever and diphtheria upon those of 1922 account in large measure for the very low general death rate of 1923. Diarrhoea and enteritis, and cancer, were registered as causes of death in rather larger numbers than in 1922. There was, throughout 1923, great risk of spread of small-pox to London. The number of cases notified in England and Wales had not reached 150 annually during the war years; in 1919, and again in 1920, it exceeded 200; in 1921 the number was over 300; in 1922 it was 967; and in 1923 it was 2,461. Fortunately the mischief caused by the disease in London was kept within very narrow limits. As was reported in our columns at the time, the small-pox introduced into London came not from the Midlands or from other counties, where prevalence of small-pox was more or less established, but from Spain.

Only 331 cases of typhoid fever were notified, and of the cases admitted to the Metropolitan Asylums Board hospitals the diagnosis was not confirmed in 60.9 per cent. Special inquiry was made in 1923 as to the bacteriological diagnosis made, if any, and replies were forthcoming in 253 cases: the presence of *B. typhosus* was recorded in 93 instances; 27 were returned as paratyphoid; 2 as paratyphoid A; 42 as paratyphoid B; 11 as paratyphoid A and B; 35 as typhoid not otherwise described; and 57 were returned as not typhoid fever. Information as to the probable origin of the disease was obtained in 173 instances: in 34 it was believed to have been contracted outside London; in 59 instances fish or shellfish was held to have been at fault; other foods were suspected in 34 instances. Among the sufferers were 17 nurses; in 9 of these *B. typhosus* was found and 4 were reported as suffering from paratyphoid B.

The volume now issued also contains the report of Sir William Hamer as school medical officer. The proportion of children found to be suffering from ailments for which treatment was necessary continued to fall. Parents are showing an increasing interest in the inspection of their children; 197,327 were inspected during the year, and the inspections were attended by no fewer than 133,240 parents. The improvement in the conditions of health of London school children is very striking when studied over a period of years; the greatest advances have been in general cleanliness and in dental conditions, but in both much still remains to be done.

### MENTAL HOSPITALS ASSOCIATION.

The sixth annual meeting of the Mental Hospitals Association was held at the London Guildhall on July 11th, under the chairmanship of Alderman Francis Bate. The report of the executive committee referred with regret to the fact that the Mental Treatment Bill had not been reintroduced into Parliament. It was to be feared that the appointment of a Royal Commission on lunacy and mental disorder would delay the introduction, but the committee affirmed its strong opinion that it was of the utmost importance that a bill incorporating the provisions of the former Mental Treatment Bill, with certain amendments which the Association had previously proposed, should be introduced as expeditiously as possible. Delegates were appointed to represent the Association on a joint deputation with the County Councils Association to wait upon the Minister of Health with a view to inducing him to meet the urgent want of legislation in this particular. The principal discussion at the meeting related to the wage scale of mental hospital workers, and the claim that the bonus should now be merged into wages. This matter was remitted to the executive committee for consideration. Among other matters similarly remitted were the question of children in wards with adults, and a proposal by Alderman D. J. Davis of West Ham, that wider powers should

be given to visiting committees to undertake the after-care of patients. Alderman Davis said that in his area there were an unusually large number of relapses, especially amongst young women. Much depended on the environment into which the patient returned on discharge, and in West Ham the environment was often unfortunate, but he thought that much could be done to prevent relapses and consequent readmissions if visiting committees had wider powers. It was promised that the executive committee should give early consideration to the matter. Alderman J. Godwin King of East Grinstead was elected chairman of the Association, and Sir William Hodgson, M.D., of Crewe, vice-chairman for the ensuing year.

### WELSH NATIONAL MEDICAL SCHOOL.

We mentioned a few weeks ago the difference of opinion that existed with regard to the future constitution of the Welsh National Medical School. The Royal Commission of 1918, over which Lord Haldane presided, recommended that the school, while it should continue to be conducted in Cardiff, should be a college of the University of Wales and not a department of the University College of South Wales and Monmouthshire. The arguments advanced by those who accept the recommendation of the Royal Commission are: that the school should be independent of any local college and controlled by the University in the same way as the other constituent colleges; that the proposal made by the Cardiff College that the Medical School should be a department of that College, administered by a Board of Medicine and a Faculty of Medicine, was unnecessarily complicated, and could not produce a truly national school of medicine; and that the modified scheme contained in the new draft charter was still too complicated. When the matter came before the Court of Governors on July 4th, the Principal of the Cardiff College spoke strongly in favour of retaining the Medical School as part of that College, and argued that it would not discharge its duties towards the whole of Wales any better as a separate college of the University than as a separate department of the Cardiff College. A resolution to the contrary effect, proposed at the meeting of the Court of Governors, was supported by Mr. A. W. Sheen, professor of surgery, and was opposed by other speakers, including Sir Isambard Owen. When put to the vote the proposal to proceed with the new supplemental charter was carried by a very large majority. Apparently the matter now goes back to the Privy Council.

## Scotland.

### CANADIAN STUDENTS IN EDINBURGH.

A PARTY of over 200 Canadian students, travelling under the auspices of the Overseas Education League, spent last week in visiting Edinburgh. The students, over 150 of whom are women, came from seven different Canadian universities, and were met by a party of Edinburgh University men and women. One day was spent in a visit to the Sir Walter Scott country in the south of Scotland. On July 10th they were entertained to a reception by the Lord Provost, Magistrates, and Council in the Edinburgh City Chambers, and various parties were conducted to points of interest in the city and surroundings. Professor Sir Harold Stiles delivered a lecture to the party in the surgery department of the university upon Edinburgh as a school of surgery in the past. Beginning with the grant of a Charter of Incorporation to the Barber Surgeons by the town council in the year 1504, he traced the development of anatomical teaching and surgery through the seventeenth century, when the Guild of Surgeons had first taken a Convening House and had later built a Surgeons'-Hall that still survived. The very valuable work done by John and Charles Bell in the introduction of surgical anatomy at the end of the eighteenth century was commented upon. The lecturer then proceeded to the important days for surgery when Liston and Syme were teaching in Edinburgh, and introducing new surgical operations, which had had an important bearing upon the development of this study in more modern days. The lecture was illustrated by lantern slides of various buildings and other features, so that the Canadian students could subsequently go and inspect these for themselves. A large number of pictures dealing with the old Edinburgh Medical School and of appliances such as the Listerian spray and personal relics like Syme's walking-stick were also shown, and provoked great interest among the visitors. After leaving Edinburgh at the end of the week the party was to proceed to York, Birmingham, and one or two other places in England, thereafter to cross to France and visit some of the principal towns, including Paris; finally, before leaving Europe, the Canadians are to pay a visit to the Empire Exhibition in London. The party is under the personal conduction of Major and Mrs. Ney.

### DENTAL EDUCATION IN EDINBURGH.

The prizes to students attending the Edinburgh Dental Hospital School were distributed on July 11th by Sir Harold J. Stiles, K.B.E. The Dean of the School, Mr. William Guy, F.R.C.S., who presided, said that in the session which had just closed there had been a considerable diminution in the number of students. This was due to two principal causes. The first was the completion of the courses of instruction by ex-service students, whose fees had been paid under the scheme for the higher education of officers and men who had served during the war. The second was the coming into operation of the new rules of the General Medical Council regarding the registration of dental students; these included a pre-registration examination in chemistry and physics, which had had the effect of delaying the entrance upon the study of dentistry of those who intended to take up that profession. This, however, would rectify itself in a year or two, and he anticipated a large increase in the number of students. In view of this prospective increase plans had already been prepared and would immediately be put into effect for an extension of the Dental Hospital and School to accommodate 200 students.

### GENETICS IN CATTLE BREEDING.

The Scottish Cattle Breeding Conference met in Edinburgh on July 8th; Sir Robert Greig, Chairman of the Board of Agriculture, presiding at the forenoon session, while in the afternoon the chair was occupied by Professor Raymond Pearl of Baltimore. Professor J. Cossar Ewart, of the Natural History Department of the University of Edinburgh, gave the opening address on the origin of cattle. He said that the Etruscan ox was the oldest ox of which anything was known. The male of this particular type had its horns somewhere between the top of the head and the eyes. The date of its domestication was uncertain, but it survived many thousands of years, and in the early Bronze Age found its way into England, where remains had been found with collections of that period. Horned cattle first found their way into Scotland from Norway in the ninth century. The Celtic Shorthorn, which was to-day represented by typical short-horned cattle, was not descended from a wild ox, but was mainly from the little Etruscan ox. Professor James Wilson of Dublin said that all breeds had had their origin in crossing between varieties which were themselves the descendants of previous crosses. No pure breeding was possible until 1600, when owners began to fence in their cattle. Herd and stud books made unimportant characters important, handicapping breeds with characters they would have been better without, and preventing them from obtaining characters which would have increased their value. Most breeds were comparatively pure in the external character, but by crossing most breeds could be improved in economic characters, because most breeds possessed something that other breeds would be the better of—for example, there was not a Frisian cow in Holland that had more than 4.2 per cent. of fat in the milk, and he doubted whether these cows could be raised to the 5 per cent. which was obtainable from shorthorns, Aberdeen Angus, and other breeds. Major E. N. Wentworth, director of Armour's Livestock Bureau, Chicago, discussed the relation between genetics and practical breeding. He said there were many problems in animal husbandry to-day which were dependent for solution upon the geneticists, and many others on the full-hearted co-operation of the geneticist and breeder. Professor J. A. S. Watson of Edinburgh University gave the results of actual breeding experiments, which had been carried out in collaboration with Lord Forteviot between

1909 and 1919, to determine the mode of inheritance in crosses between Aberdeen Angus and West Highland cattle, of the horned and polled conditions. The polled and horned conditions formed a simple Mendelian pair; the polled condition being completely dominant in the female, while in the male horn development was inhibited, but not always suppressed; black was dominant to red, and the colours behaved as a simple Mendelian pair.

### School of Social Study in Edinburgh.

Professor Sir Richard Lodge, LL.D., presided at the annual meeting of the Edinburgh School of Social Study, which was held on July 10th in the Senate Hall of the University. The chairman stated that this school had recently stiffened its course by introducing a certain portion of the graduation classes within the University; a gratifying result of this was that the school had brought a number of promising graduation students to the University. The requirements of the practical side had, however, been carefully maintained, and in connexion with this the University Settlement played a prominent part. He appealed to the citizens of Edinburgh to support the great work done through the Settlement by providing for it a secure income. The adoption of the annual report was moved by Professor J. C. Meakins, who said that every practically minded individual must be anxious to see the removal of the discontent which at the present day led to endless disputes and reduced our wealth-producing capacity. The connexion which now existed between departments of social study and the University was of great value in this connexion. It was evident from the report of the work of the school during its past session that the executive committee had aimed at providing a course of a really high academic standard for those who desired and were able to devote their lives to the larger social questions; at the same time it provided a special course suitable for those who aimed at specializing on health questions and who had already been through the long and arduous course of training to qualify them as hospital nurses. It had also special courses for persons already engaged in any of the more important branches of social activity, such as the civil and local administrative offices. He thought that social study must advance in the correlation of theoretical and practical work. An example of this was found in the starting of hospital social service in connexion with the Royal Infirmary of Edinburgh. The social visitor, seeing the trained skill of the physician being wasted through the impossibility of carrying out the treatment he suggested, brought all her forces to bear upon altering home circumstances so as to make them more nearly harmonize with the recommendations of the medical expert. Social work was becoming a science. The Factory Acts, which limited the hours of workers, specially those of children, had demonstrated that the child was frequently the victim of his home surroundings, and efforts to raise the housing standard generally followed factory legislation. The problem of the mentally defective and of their children had to be faced. This was one of the points where the universities came in, and where those who believed in social study claimed their aid. The progress recounted in the present report was encouraging, but development was necessary and required practical help. Social problems which seemed at first to baffle all attempts at solution were solved gradually when the fundamental facts had been discovered. Trained workers were necessary, and this training could only be obtained from schools qualified to teach the subject.

### Cholera in the Nineteenth Century.

During recent excavations for new houses at Leith a number of coffins were found. Dr. Robertson, M.O.H. Edinburgh, has reported to the town council that the remains are probably those of victims of a cholera outbreak which occurred in 1832. It began in some of the coal-mining villages of East Lothian and spread widely to Glasgow, Edinburgh and Leith, and Ayrshire. In Glasgow, during the year 1832, there were as many deaths from cholera as there were births in that year, the total number of cases being 6,208, while in Edinburgh the deaths numbered 1,886. In the autumn of 1832 the epidemic had passed to the North of Scotland, and in some villages the inhabitants had been practically entirely wiped out. This cholera epidemic had caused no fewer than 10,000 deaths over the whole of Scotland, for in those days the influences of "carriers" and impure water supplies, as means of spreading disease, were not recognized, nor was quarantine practised as it now is.

### Edinburgh Royal Maternity Hospital.

Dr. Fordyce and Dr. Johnstone will do duty as physicians during the current summer at the Edinburgh Royal Maternity and Simpson Memorial Hospital, with Dr. Davidson and Dr. Browne as assistants; during the autumn term Dr. Johnstone and Dr. Haig Ferguson will act as physicians, with Dr. Browne and Dr. Young as assistants. Two male residents (Dr. J. Chassar Moir and Dr. James S. Hovell) and two female residents (Miss Dorothy Potter, M.B., and Miss Jessie Eeles, M.B.) were appointed for the quarter commencing July 1st, 1924. Dr. W. J. Browne and Dr. W. F. Theodore Haultain were appointed to take charge of the ante-natal department.

### Nursing Service in Fifeshire.

A garden fête was held at Broomhall, Fifeshire, the seat of Lord Elgin, in aid of the funds of Broomhall District Nursing Association. A largely attended meeting was opened by the Rt. Hon. W. Adamson, M.P., Secretary for Scotland, who expressed his appreciation of the good work which was being accomplished in all parts of the country by nursing associations. He pointed out that nearly 600 nurses were doing district work in various parts of Scotland, and that in the course of the past year they had dealt with nearly 100,000 cases, necessitating approximately one and a half million visits. In the county of Fife alone 67 nurses were doing work, but he believed that those who were organizing this service considered that a staff of at least 80 nurses was necessary to overtake the work which might be done. In the mining industry the thirty branches of the Fife, Kinross, and Clackmannan Mine Workers' Association were contributing systematically, week by week, to the funds of the nursing associations. The movement was also supported by the coal-owners, and, in the case of the Wemyss Coal Company, the contribution was at the rate of £35 in respect of each nurse appointed in the area covered by the operations of the company. He considered that the work of these nurses was one of the phases of public health welfare which everyone must desire to assist to the greatest degree possible.

## Ireland.

### Local Government and Public Health Bill (Irish Free State).

A meeting of the Executive Subcommittee of the Irish Medical Committee was held at the Irish offices of the British Medical Association, 16, South Frederick Street, Dublin, on July 7th. Dr. J. M. Day, F.R.C.P.I., was in the chair, and Drs. W. W. Murphy, H. Raverty, P. Magner, J. P. Shanley, and T. Hennessy, and Mr. C. H. Gick were also present. Dr. R. J. Rowlette was unable to be present owing to his being on holiday. A report of the proceedings of a conference of medical corporations and organizations held recently in the Royal College of Physicians, Dublin, was considered. Its recommendations with regard to amendments to be brought to the notice of the Minister of Local Government and Public Health in connexion with the Local Government and Public Health Bill were discussed at length and adopted with some alterations and additions. The following is a summary of the more important amendments to be urged on the Minister for acceptance:

1. A ministry of health to be established for the Free State.
2. A central health council to be established with the constitution and powers recommended by the Irish Public Health Council.
3. The constitution of the county health boards should be as recommended in the report of the Irish Public Health Council.
4. It is essential for efficiency that the administration of public health matters should be on a county basis.
5. The county medical officer of health should be a whole-time officer whose qualifications in public health should include the holding of a diploma in public health and of having practical experience in public health matters.

6. The medical officer of health should not himself be expected to carry out medical examination or treatment such as is done by a tuberculosis medical officer, child welfare officer, or medical inspector of schools.
7. In section 12, that at least one half of the expenses for public health administration should be contributed by the central government.
8. In section 29, as in the Local Government Act, 1919, the granting of a pension should be compulsory, and not permissive as in the bill.
9. In section V, part I and part II, that the present system of adding years for professional and meritorious service should be maintained as the basis of calculating the amount of pensions for medical officials.
10. That section 32 (1) (2) (3) be not applicable to pensioned medical officials.

At the conference of the medical bodies held in the Royal College of Physicians it was agreed that representations to the Government be made through the Irish Medical Committee.

### THE ROYAL MEDICAL BENEVOLENT FUND SOCIETY.

The annual meeting of the Royal Medical Benevolent Fund Society was held in the Royal College of Surgeons, Dublin, on June 23rd, under the chairmanship of Sir Conway Dwyer. The annual report stated that the income of the general fund from all sources was £1,849; no legacies were received during the year. There were increases of £9 odd in subscriptions transmitted by branches, £2 2s. in subscriptions paid through the British Medical Association, and £12 4s. 6d. in those paid through the treasurer. In proposing the adoption of the report Dr. Kirkpatrick regretted that the society was not so well supported as it deserved. A resolution of thanks was accorded to the provincial branches for their hearty zeal in the society's work and urging the profession to make a moderate annual contribution to the fund in order to relieve more adequately the distressing appeals received for assistance.

### QUEEN'S UNIVERSITY OF BELFAST.

The summer graduation ceremony was held in the Assembly Buildings, Belfast, on July 9th, when the Chancellor (Lord Londonderry) presided over a large attendance. The new Vice-Chancellor (Richard W. Livingstone, M.A., Fellow of Corpus Christi College, Oxford) received the honorary degree of Doctor of Literature. Dr. Livingstone has always shown a lively sympathy with the medical faculty and a keen interest in its ambitions and development. The degree of M.B., B.Ch., B.A.O. was conferred on 74 candidates, of whom 17 were women; Miss Pauline Heron was the only one who gained first-class honours; 8 candidates obtained the D.P.H., 3 the L.D.S., and 6 the M.D. The large number of M.B. graduates is due to the huge entries of five years ago.

After the graduation ceremony the Belfast Division and the Ulster Branch of the British Medical Association combined to hold a short reception of the new medical graduates in the Students' Union. Tea was served, and short addresses were given by Professor Thomson, Professor Johnson, Dr. Darling of Lurgan, Dr. Leslie (Representative), and Dr. Storey. All advocated the claims of the Association, related the advantages it afforded to members, and explained its objects. The speakers welcomed the newcomers, congratulated them on their success, and wished them God-speed in their sphere of life. A similar reception was held by the Women Graduates' Association for all the new women graduates of all faculties, and was largely attended.

### MEDICO-PSYCHOLOGICAL ASSOCIATION.

The eighty-third annual meeting of the Medico-Psychological Association of Great Britain and Ireland was held in Belfast on Tuesday, July 1st, and the following days, under the presidency of Dr. M. J. Nolan, Downpatrick Mental Hospital. It was the first time in the history of the association that it had met at Belfast, and the Minister of Home Affairs for Northern Ireland, the Lord Mayor and Corporation of Belfast, and the University joined to extend a most hospitable welcome to the members. On Wednesday, July 2nd, the Lord Mayor entertained the association and various members of the Corporation at lunch in the City Hall. Afterwards Dr. Nolan delivered the presidential address, and subsequently the Purdysburn Asylum was visited. In the evening a reception was held by the Vice-Chancellor and Medical Faculty of the Queen's University, at which many friends from the town also attended. The association was also entertained at lunch during its visit by the Minister for Home Affairs (Northern Ireland), who was regrettably absent though illness, but sent a message extending a most hearty welcome to the association. The annual dinner was held, by permission of the University, in the Examination Hall on Thursday evening. On July 4th Downpatrick Mental Hospital was visited and the meeting was entertained at lunch by the Right Hon. R. D. Perceval-Maxwell, D.S.O., and the Committee of Management, and subsequently Mrs. Nolan received the visitors at a garden party. On Saturday, July 5th, a most enjoyable excursion was organized to the Great Northern Hotel, Rostrevor.

## Medical Notes in Parliament.

[FROM OUR PARLIAMENTARY CORRESPONDENT.]

### Royal Commission on Lunacy Laws.

MR. GREENWOOD, the Parliamentary Secretary for the Ministry of Health, on July 11th moved:

"That it is expedient that a tribunal be established for inquiring into a matter of urgent public importance—that is to say:
(1) The existing law and administrative machinery in England and Wales in connexion with the certification, detention, and care of persons who are or are alleged to be of unsound mind.
(2) The extent to which provision is or should be made in England and Wales for the treatment without certification of persons suffering from mental disorder."

The Minister said that the object of the resolution was to give to the Royal Commission set up to inquire into the administration of the Lunacy Laws the power of summoning witnesses and of hearing their evidence on oath; and also to give to the witnesses themselves the privilege enjoyed by witnesses in courts of law. Ordinarily a Royal Commission has no power of summoning witnesses or hearing evidence on oath, and the privilege enjoyed by witnesses who voluntarily come to give evidence before a Royal Commission, so far as action for libel and slander are concerned, is at most a qualified and not an absolute privilege. To remedy this state of things the Tribunal of Enquiry (Evidence) Act, 1921, was passed with a view to securing these powers for a Royal Commission. Section 1 of that Act provides that—

"where it has been resolved by both Houses of Parliament that it is expedient that a tribunal be established for inquiry into a definite matter described in the resolution as of urgent public importance, and in pursuance of the resolution a tribunal is appointed for the purpose either by His Majesty or a Secretary of State, the instrument by which the tribunal is appointed or any instruments supplemental thereto may provide that this Act shall apply, and in such case the tribunal shall have all such powers, rights, and privileges as are vested in the High Court, or in Scotland the Court of Session, or a Judge of either such Court, on the occasion of an action in respect of the following matters."

These matters included the summoning of witnesses and their examination on oath. The Chairman of the Commission on Lunacy Laws had represented to the Government that it was essential they should be vested with the powers conferred by the Act of 1921.

Mr. Pringle asked what the exact effect would be. Would this body cease to be a Royal Commission and become a tribunal under the Act of 1921? Mr. Greenwood replied in the negative. The body became a Commission when it was set up. The motion was agreed to.

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*Research Scholarships.*—In Committee on the Finance Bill, on July 8th, Sir Geoffrey Butler moved a new clause to exempt income arising from a studentship or fellowship for research studies at any British university from taxation. The average income was about £250 a year and not more than 250 persons were affected. Mr. Graham replied that two classes of exemption already existed, and it would be very difficult for any Chancellor of the Exchequer to make a further departure without a serious inroad upon recognized income tax practice. The more exemptions given to particular callings the greater was the tendency to break down the whole structure and to create a mass of anomalies. The amendment was rejected by 185 votes to 100.

*Lunacy Accommodation.*—In reply to Mr. R. Richardson, on July 9th, Mr. Wheatley said that only one scheme for the building of a new mental hospital was in contemplation, but further accommodation would be needed in the near future. On January 1st last there were only 4,754 vacant beds. As the average annual increase of certified patients during the last two years had been at the rate of 3,265, it was obvious that further provision was necessary. The question whether provision should be made for the early treatment of cases of mental disorder without certification was one of the principal matters referred to the Royal Com-

mission recently appointed. Mr. Richardson asked if the attention of the Minister of Health had been called to the remark of Lord Justice Scrutton on the occasion of the appeal against Harnett, in regard to the need for a thorough examination into the ground on which an alleged lunatic was imprisoned as well as the desirability that he should at intervals during detention have the opportunity of demanding an independent investigation of his case. Mr. Wheatley said the point mentioned came within the terms of reference of the Royal Commission.

*Dissection of Paupers' Bodies.*—Mr. Wheatley stated, on July 9th, that the application by the Ministry of Health to the Kingston Board of Guardians with a view to arrangements for that authority to hand over the bodies of dead friendless paupers to the London Hospital for dissection was made with his authority. In this matter he had followed the invariable practice of his predecessors and of successive Home Secretaries, with whom the responsibility under the Anatomy Acts rested prior to the transfer of this duty to the Ministry of Health. He recognized the very natural objections which such a proposal must at first sight excite, but he was satisfied that there was no alternative which would not have disastrous effects on surgical and medical education, and ultimately on the treatment of the sick. The effective teaching of anatomy and operative surgery would become impossible unless the necessary subjects could be made available for practical instruction. If anatomy could not be taught by the examination of the dead it would have to be learned by experiment on the living; and except in the case of the comparatively small number of students who could afford to go abroad for their anatomical study, young practitioners would be compelled to acquire by experimenting on their patients the knowledge which it would have been impossible to impart to them in the medical schools. Many unions throughout the country, including those adjacent to Kingston, were co-operating in this matter. It was generally recognized by the guardians that the poor would be the first to suffer if medical students could not obtain the necessary teaching without going abroad for it. The Anatomy Acts contained detailed provisions as to the conditions under which bodies were to be used for this purpose, and those provisions were enforced under the constant supervision of His Majesty's Inspector of Anatomy. All bodies used for this purpose were duly interred within the prescribed period after a religious service appropriate to the denomination to which the deceased belonged. The place of burial was carefully recorded.

*The Spahlinger Treatment.*—Mr. Wheatley said, on July 9th, that all such inquiries as were practicable in the absence of a supply of M. Spahlinger's preparation for scientific investigation had been made by the Ministry of Health. The results of these inquiries did not enable him to pronounce an opinion as to the efficacy of the treatment, but they were sufficient to indicate the desirability of a scientific investigation whenever a supply of the preparation was forthcoming. He was still without information when it would be available.

*Eyesight Test for Bus Drivers.*—Mr. Henderson, on June 26th, replying to Mr. G. Locker-Lampson, said that for many years certificates of physical fitness had been required from bus drivers, and these certificates covered vision. He would look into the suggestion whether men who could drive safely with spectacles should be tested wearing spectacles.

*Admiralty: Automatic Promotion.*—Giving a list of the ranks and ratings of officers and men in the Admiralty who now receive automatic promotion subject to certain conditions being fulfilled, Mr. Ammon, on July 9th, included the following: Surgeon lieutenant to surgeon lieutenant-commander: at six years, subject to service qualification and recommendation. Surgeon lieutenant-commander to surgeon commander: at six years, subject to service qualification, recommendation, and passing necessary examination. Surgeon lieutenant (D) to surgeon lieutenant-commander: at six years, subject to recommendation.

### *Notes in Brief.*

According to the provisional figures received by the Registrar-General the deaths registered in England and Wales in the quarter ended March 31st included: small-pox 3, measles 1,741, scarlet fever 263, diphtheria 742, encephalitis lethargica 229. No separate figures are at present available of deaths from pneumonia or from influenza in the period. The returns from the second quarter ended June 30th are not yet available.

In reply to a series of questions regarding Craigleith Pensions Hospital and the possibility that patients would be removed thence to Bellahouston, the Minister of Pensions said that comprehensive arrangements are being made for hospital accommodation in Scotland, and that he hoped to make a statement a fortnight hence. He stated also that the accommodation at Roehampton Hospital is ample and no unavoidable delay occurs in fitting or repairing artificial legs. Every pensioner has been supplied with a duplicate leg, to be used while the first limb is under repair, and necessity for personal attendance at hospital is thus, for the most part, avoided after the first fitting.

The Minister of Health is making every effort to persuade local authorities to offer adequate salaries to nurses. He has already reminded a deputation, however, that the matter rests with the local authorities.

The ages of the seven persons registered as having died from small-pox in England and Wales during 1923 were as follows: 1 month, 10 months, 5 years, 53 years, 28 years, 55 years, and 17 years. The first four named all resided at Gloucester; the others at Neasden (Willesden), Battersea, and Chester respectively.

Mr. Wheatley, on November 9th, said that while he favoured the employment of women medical officers to take charge of ante-natal clinics, he was not prepared to require that this should be done in all cases.

# Correspondence.

## ARTERIO-SCLEROSIS.

SIR,—In your leading article[1] on the clinical aspect of arterio-sclerosis, you state you would be interested to hear my views on the pain associated with arterio-sclerosis. As it happens, I am at this moment deeply interested in this question, and read Dr. Evans's article with much interest. As I approach the subject from a somewhat different aspect some of my observations may throw little light on the problems which he discusses.

The source of the essential signs of arterio-sclerosis can be identified by a simple process of reasoning.

The functional efficiency of organs is dependent upon the blood supply, and when the blood supply is insufficient the functional efficiency will become impaired. As arterio-sclerosis interferes with the blood supply, the essential signs of this disease are to be found in the evidences of impaired function of the organs whose blood supply is defective. Moreover, all organs have periods when they are relatively quiescent and periods of greatly increased activity, so the amount of blood required varies. The effects of the impaired supply will first be shown when the organs are exercised to their full functional capacity.

In passing I may mention that this is the basis of the principle of the "response to effort" which we employ in the investigation of symptoms at this institute.

There are certain organs, such as the muscles, whose periods of activity show a great increase as compared with their quiescent periods. When the blood supply is defective there may be no sign when the muscles are at rest, but when effort is made they may become speedily incapable of contraction, producing a sense of fatigue and pain. When the blood supply to the muscle of a limb is diminished or cut off, as in blocking of an artery by an embolism, movements of the limb produce such pain as to compel the cessation of effort. The same thing happens in sclerosis affecting the arteries of a limb.

A man for several years had been gradually becoming less able to walk distances on account of weakness and pain in his legs. Occasionally, some hours after walking a good distance with many stops, he suffered great pain in the legs when resting. Latterly he began to be pulled up, sometimes by pain in his chest, and sometimes by pain in his legs. Now he has no trouble with his legs because he can only walk a short distance on account of the pain in his chest. He has had to give up writing because the exercise produced pain in his arm. The conclusion drawn is that this individual has got arterio-sclerosis of the leg, of the heart, and of the arm.

In a series of patients with angina pectoris carefully observed at the institute during life, and whose hearts have been investigated after death, it is possible to correlate the morbid condition with symptoms during life. A healthy coronary artery is a very distensile vessel. I had always been puzzled to account for the occurrence of angina pectoris in some patients who had disease of the aortic valves, and its absence in others. In one of these hearts the reason was found. The sclerotic process which had affected the valve had extended up the aorta and embraced the mouths of the coronary arteries so that they were considerably reduced in size and very rigid. When we considered the evidences which were present during life the only sign was pain in response to effort. In several other hearts the walls of the arteries in patches were thickened and the lumen narrowed or obliterated. In two cases a large mass of the heart muscle was degenerated. During life the only symptom was pain on exertion.

I do not discuss here the processes concerned in pain, but merely record the fact. As a result of my investigations into pain extending over forty years, wherever there has been very severe pain arising from an internal organ—that is to say, by organs not supplied with cerebro-spinal sensory nerves—and the source of the pain could be traced, it was invariably found to be a muscular organ. I am not suggesting that all such pains are muscular in origin, for it

[1] BRITISH MEDICAL JOURNAL, July 5th, page 23.

is not always possible to demonstrate the source of pain, but where it has been possible to demonstrate this it has been a muscular organ.

Dr. Evans refers to the tenderness of arteries and veins. The hyperalgesia which is of common occurrence in the structures of the external body wall, skin, muscles, glands, arteries, veins, etc., have a different origin from pain. Such hyperalgesias may follow attacks of pain, but they are more frequently present independently of pain unless when the structures are pressed upon. Hyperalgesia is a problem of another kind.

During the many years I have been studying arteriosclerosis I have watched its progress in a goodly number of people, and I have come to the conclusion that arteriosclerosis is secondary to an obliteration of the capillaries.

Of all organized structures in the body the capillaries are the easiest to develop. Of all organized structures of the body the capillaries are the easiest to destroy. The obliteration of capillaries leads to a great variety of phenomena according to the function and constitution of the structure. The obliteration in the skin leads to that thinning which is so apparent in the elderly, when the skin may resemble and be nearly as bloodless as tissue paper. In other structures the obliteration leads to fibrosis, fatty degeneration, and calcification.

I am inclined to the view that all degenerations of arteries are the result of obliteration of the capillaries of the arterial wall. There are various agents which produce this obliteration. There are those which accompany old age. There are those which arise in inflammations; as inflammation subsides, the agents of disease destroy the capillaries and leave behind fibrotic tissue in place of the original cells.

This view enables us to grasp the meaning of a great many forms of disease which have hitherto been difficult to understand. One of our endeavours at St. Andrews is to classify the phenomena of disease according to their affinity in nature. In achieving this there is one line we pursue—namely, to group diseases according to the morbid process which produces them. If, for instance, we take a series of diseases which are usually looked upon as separate and distinct, such as valvular disease, myocardial disease, angina pectoris, auricular fibrillation and heart-block, and look carefully at the origin of these so-called diseases, we find a close relation. In the elderly the valve disease is due to the shrinking and thickening of the valves as the result of obliteration of the capillaries. The same cause accounts for the fibrotic degeneration of heart muscle and the narrowing of the lumen of the coronary arteries which result in angina pectoris. The active structures in the conducting system, like the sino-auricular node and auriculo-ventricular node, suffer from obliteration of the capillaries, and these structures become fibrotic, resulting in the one case in auricular fibrillation and in the other in heart-block. Occasionally we get both these conditions in the same individual.

We have seen in the individual above mentioned that it was the same condition which limited his legs and his heart in walking and his arm in writing. His brain becomes easily fatigued on reading, and his memory is becoming impaired, and his digestion is not nearly so robust.

From such illustrations one can see that a great variety of symptoms may all be due to the same morbid process, the variety being dependent upon the organ or the part of the organ whose blood supply is impaired. I should not be surprised if the time will come, that in place of authors describing their books as "diseases of the heart and aorta," they will substitute the title "disease of the capillaries of the heart and blood vessels," and that old tag that "a man is as old as his arteries" will be changed into "a man is as old as his capillaries."

A few weeks ago, being in a medical library, I turned up a number of pathological textbooks to see what was said about diseases of the capillaries, and was surprised to find the subject barely mentioned in some and not mentioned at all in others. But this is not surprising, for, simple as the capillaries are, the manner in which they function is not understood, and consequently the part they play in the economy cannot be recognized. The work, on capillaries, of Krogh and of Dale, and our attempts, are opening a new field in physiology, pathology, and clinical medicine.—I am, etc.,

J. MACKENZIE.

The St. Andrews Institute for Clinical Research,
St. Andrews, Fife, July 8th.

## CARDIAC DELIRIUM.

SIR,—We have to thank Professor Robertson for his valuable aid in the discussion of cardiac delirium and its causes. But my point was not that delirium of place was any rarity, or confined to cardiac disease, but that it was particularly the delirium of cardiac disease, and then apt to occur without other delusions or much other mental aberration save such as pertain to any mortal strife. I spoke not of a general clouding of the faculties with lucid intervals, but of an alternation of this consistent delusion with comparative sanity.

Mere deprivation of oxygen occurs in other states without these features; and in cyanosis a similar reflection arises; both these conditions are frequent: this particular delirium in heart disease is infrequent.

It gave me pleasure to read Sir James Barr's appreciation of Benjamin Ward Richardson, of whom he says not a word too much. And I would thank Professor Stalker for his interesting contribution to the subject; but I am led to trouble you again in order to report very briefly two cases of cardiac delirium sent to me by that well known authority in heart diseases, Dr. Carey Coombs.

"I have seen," he writes, "several striking instances of the condition you describe—for example, in an elderly man who suffered from myocardial break-up; as he grew worse, a confusion of place, which he had shown for some time occasionally, increased. He disbelieved us when we assured him that he was at home. Again, a medical colleague, who died of cardiac disease, was under a continual misapprehension as to place. We were in league to deceive him; and wherever he supposed himself to be—'Tunbridge Wells, Cambridge, London'—he was puzzled to find in his bedroom the same furniture to which he was used to at home. I have thought these cases partly toxic, and possibly associated with acidosis, which is to be detected in the final states of such cases; or partly due also to degenerative changes in the cerebral arteries."—I am, etc.,

Cambridge, July 10th. CLIFFORD ALLBUTT.

## GOITRE.

SIR,—I share with Dr. Chalmers Watson (June 14th, p. 1071) the high opinion which he expresses of the work of Lieut.-Colonel R. McCarrison on the etiology of goitre. When Colonel McCarrison's book on the thyroid gland appeared in 1917, I began at once to treat cases of goitre with intestinal antiseptics. I selected for this purpose small recent parenchymatous goitres where symptoms were comparatively trivial and indications for surgical treatment were absent. I used thymol, beta-naphthol, salol, and kerol for periods up to twelve months, and in all cases I pushed the dosage of these drugs up to or beyond those generally recommended.

I have now treated upwards of a hundred cases from all parts of London and the provinces in this way (including both endemic and sporadic varieties of goitre), and my conclusion is that these drugs have no curative effect whatever on such goitres. Furthermore, several cases while under treatment increased sufficiently in size to produce pressure phenomena, and to need operative treatment, while over twenty others have grown noticeably—though not at present needing surgical intervention. A few cases have diminished slightly in size, but certainly not more than occasionally follows the use of such drugs as iodine, arsenic, etc.

The explanation of such failure to obtain results comparable with Colonel McCarrison's may be (1) that the type of goitre which one has to deal with in this country has a different cause from that on which Colonel McCarrison worked while in India; or (2) that intestinal antiseptics are not so efficient in their action on the intestinal bacteria of

the European. Whichever explanation is true, it seems to me proper that the matter should be fully investigated, in view of the very great interest which Colonel McCarrison's work has aroused in the problem of the prevention and cure of goitre.—I am, etc.,

London, W.1, July 8th. CECIL A. JOLL.

## LIFE INSURANCE WITHOUT MEDICAL EXAMINATION.

SIR,—The letter from "Medical Referee" which appears in the JOURNAL of July 12th (p. 83) contains so much that is admirable that one is reluctant to draw attention to a certain confusion of thought in the conclusions he draws.

There can be nothing but praise for the advice to a prospective bridegroom to seek the safeguard of a medical examination before marriage, and to assure his life in order to make provision for his wife-to-be. It would not be seriously contested that the present satisfactory state of the leading life assurance companies is due in no small measure to the skill of those medical men who have examined applicants for life assurance and to the skill of the actuaries who have based their calculations upon the results of those examinations.

But it may fairly be assumed that those companies which now dispense in whole or in part with special medical examinations do so from business motives and upon actuarial advice based upon experience, and that they have not concerned themselves in any way with the convenience or otherwise of those about to marry.

Just as it would be unwise to base a diagnosis upon one symptom without regard to any others, so it would be most undesirable for any doctor to recommend to a patient any assurance company or group of companies merely because it or they insist upon a special medical examination. Life assurance is an intricate and specialized business, and many things must be considered before advice can be given as to the suitability of any particular policy to any particular case.

As, largely through the efforts of yourself and the editor of the *Lancet*, an agency has been established here to give free and expert advice on insurance to medical men and women, I would suggest that no doctor should take out or recommend to a patient any policy of assurance without first consulting the Medical Insurance Agency.—I am, etc.,

L. FERRIS-SCOTT,
*Secretary.*

Medical Insurance Agency,
429, Strand, W.C.2, July 12th.

## THE R.A.M.C.(T.A.).

SIR,—As you have already extended the hospitality of your columns to Captain Goodbody and my "opposite numbers" Colonel Arnold Wraith of the 46th Division and Colonel Ducat of the 56th Division, may I in turn be permitted to urge the claims of the 47th (2nd London) Division in a similar direction?

Particular stress has been laid on the difficulty which is being experienced in obtaining a sufficient number of young medical men to fill the many vacancies in the commissioned ranks of the R.A.M.C.(T.A.). Many of the units of the Division will attend annual training this year without a medical officer. This means that the medical charge of such a unit will have to be undertaken by a medical officer belonging to another more fortunately situated.

The peace time establishment of a territorial battalion allows two medical officers, but only one of these is paid at annual training. By this arrangement only one need attend. During the remainder of the year the work at headquarters is usually shared by them. This means, of course, that with anything like a full establishment the duties are extremely light. Most units have in ordinary times certain evenings on which officers meet for their various duties, and a medical officer is expected to be available some time during the course of the evening for the examination of recruits. The officers' mess is open and there are abundant opportunities for very pleasant social intercourse. A well run Territorial officers' mess is usually regarded by its members as a club, with all the amenities of such an institution. I make a special point of this because I do not think it is fully realized how very enjoyable it is to drop in to the mess after a day's work and have a yarn and a drink and possibly a rubber. In this way one makes friendships which last a lifetime. The "Doc" is generally everybody's friend, and it is entirely his own fault if he does not have a thoroughly good time.

I speak with the experience of many happy memories of my Volunteer and Territorial days. I well remember that I was first impelled to enrol myself when I sat at the feet of a famous professor of anatomy in a northern university. It will no doubt be remembered by all who had a like privilege that in each year after his description of the spinal column he always urged his class to "join the Volunteers" so that they might continue to stand and walk erect. A good deal of water has flowed under the Forth Bridge since then, and one can look back on many changes in our corps. Its achievements in the great war should surely be an inducement for the younger members of our profession to come forward and carry on those wonderful traditions which were gained at the cost of many and valuable lives.—I am, etc.,

M. B. RAY,
Colonel A.M.S.(T.A.),
A.D.M.S. 47th (2nd London) Division (T.A.).

Duke of York's Headquarters,
Chelsea, S.W.3, July 15th.

## THE GOVERNMENT FACTORY BILL.

SIR,—It appears to be extremely unlikely that the Government Factory Bill will get its second reading this session. The Home Secretary, earlier on, apparently believed that by visiting factories himself and by allowing joint meetings of masters and employees in the textile industries to settle details of required legislation he could produce a non-contentious measure which would get through its various stages very smoothly. This optimistic view may or may not have been modified, but certainly the bill cannot be regarded as non-contentious. It seems to have been compiled with somewhat insufficient regard to the circumstance that Factory Acts are primarily concerned with health matters, and that the views of the medical profession are of some consequence when existing provisions involving these are to be cast into the melting pot. Since the first reading was taken it is becoming increasingly evident that certain of its clauses are regarded as distinctly retrograde by two separate branches of the profession. Medical officers of health have been intimately associated with the securing of sanitary conveniences in both factories and workshops since the passing of the Public Health Act, 1875, and under the Factory Act of 1891 they took over the administration of all the sanitary provisions affecting workshops. The factory inspectors have always had over-riding powers to secure the carrying out of obligations by local authorities in these directions, and these were strengthened by the Factory Acts of 1895 and 1901. The present bill proposes to take away all these statutory powers with one insignificant exception in the case of certain factories attached to or forming part of a dwelling house or shop, and, in substitution, to hand back the present control, with any modifications thought fit, by Secretary of State's orders. This indicates a very big change, the actual necessity for which is somewhat difficult to understand. Granting the many difficulties experienced by the Factory Department in keeping a number of authorities up to the mark, it should surely be possible to deal with these bodies by regulations whether their administrative powers are exercised by statute or by Secretary of State's orders. It would also be very interesting to know how this change would affect the local building by-laws. At present the local authority is the only body which has any powers to review the plans of a new factory or workshop and which can insist on certain sanitary requirements being fulfilled as a condition of erection. Obviously this is a phase of the question which demands some consideration.

It is proposed to deal with certifying surgeons in a very drastic fashion. This branch of the profession has been judged by a Departmental Committee, the constitution of which gave rise to a preliminary objection from those to

whom the inquiry was of such intimate concern. Apart from being badly constituted, this committee did its work too hastily. It is, therefore, not surprising that the results should be unsatisfactory, and, judging from the more drastic treatment meted out by the bill itself, even the Government could not have been satisfied with the main recommendation. It is a very curious feature of the treatment proposed for certifying surgeons that, although the fault of the present system is said to lie in the divergence of standard of examinations among certifying surgeons, and that this complaint is exactly on the same lines as that laid against local authorities in their dealings with sanitation of factories and workshops, the actual method to be adopted is diametrically opposed to the one laid down for local health departments. Whilst the latter are to be dealt with by centralizing control the same type of fault on the part of the certifying surgeon is to be cured by introducing local control. To the ordinary individual this would appear paradoxical. The present certifying surgeon is to be deprived of his statutory position and to lose his identity by becoming one of a class, whilst his successor is to be appointed and controlled by any or every local authority at the discretion of the Secretary of State, subject only to such regulations as to duties as may be made by order. Granting, as in the previous case, that the fault be correctly diagnosed, it again becomes somewhat puzzling to understand why it should be regarded as necessary to turn things upside down to find a remedy. Uniformity of practice throughout the whole country can be obtained with certainty under central control if this be properly exercised. Why not look at the matter from the point of view of the young person? His requirements are an effective examination and uniformity in certification in whatever area he seeks employment. The processes at which young people work and the conditions attendant on these are regulated by industrial necessities and not by local requirements, and any attempt to act contrary to this dictum would certainly result in confusion.

The bill contains many valuable provisions which ought to become law, and the official desire to get them through Parliament as smoothly and expeditiously as possible can easily be appreciated. Should the Home Secretary still be desirous of shepherding a non-contentious measure, he might with advantage seriously consider how his bill is being taken by the medical profession.—I am, etc.,

July 14th. PUBLIC HEALTH.

## NON-PROFESSORIAL STAFFS OF UNIVERSITIES.

SIR,—My attention has been directed to the observations made by you in introducing the Edinburgh statement, which you were so good as to publish in your issue of July 12th (p. 63). I need hardly say that it was not the intention of the Committee of the Non-Professorial Staff to suggest that the professorial staff is overpaid. The statistics on which your inference is apparently made were inserted solely in order to show clearly the existing disparity between the salaries of the professorial and those of the non-professorial staffs. The intention of the statement was to emphasize strongly the view that, corresponding to the character of the educational work entrusted to them, members of the non-professorial staff should be paid salaries more closely approximating to those paid to members of the professoriate than is at present the case.—I am, etc.,

JOHN E. MACKENZIE,
Convener,
Non-Professorial Staff Committee.

Medical Chemistry Department, University of Edinburgh, July 12th.

## POST-ANAESTHETIC VOMITING.

SIR,—If Drs. Cave and Edwards, the writers of the interesting note on post-anaesthetic vomiting (July 5th, p. 11), will try washing out the stomach with plenty of alkaline fluid before the patient leaves the table, they will be pleased with the results. It is easy and safe, and almost entirely abolishes vomiting.—I am, etc.,

Derby, June 9th. V. T. CARRUTHERS.

# Universities and Colleges.

## UNIVERSITY OF LONDON.

### UNIVERSITY COLLEGE.

*Centenary.*

THE hundredth anniversary of the foundation of University College, London, is to be celebrated in 1926, and a history of the college is being prepared. It will include a chapter on the contribution of the college to medical education and research. The Provost, Sir Gregory Foster, asks for the loan of documents likely to be of use for this purpose. Communications (marked "Centenary") should be sent to him at the college.

*Sharpey Physiological Scholarship.*

An appointment will shortly be made to the Sharpey physiological scholarship (value £160), founded in memory of Professor William Sharpey. The scholar has full opportunities for research in physiology, and takes a small share in teaching and demonstration. Applications, with full particulars, should be sent to the secretary of University College, Gower Street, W.C.1, not later than Saturday, July 26th.

### GUY'S HOSPITAL MEDICAL SCHOOL.

The following scholarship awards have been made: War Memorial Scholarship in Arts: John W. Crow (Charterhouse), £200. Open Scholarship in Arts: John W. Oliver (Felsted), £100. Scholarships in Junior Science: Confined Scholarship, William D. G. Jones (Sexey's School, Bruton, and Guy's Hospital Medical School), £100; Open Scholarship, William L. M. Bigby (Cranleigh and Guy's Hospital Medical School) and Walter P. Roe (University College School and Guy's Hospital Medical School), equal £50 each.

## UNIVERSITY OF LIVERPOOL.

THE following candidates have been approved at the examinations indicated:

M.D.—H. Cohen, M. J. Cohen, B. L. McFarland.

PH.D.—T. Southwell.

M.B., CH.B.—*†C. B. Bamford, *‡Helen S. H. Brown, *‡A. Pool, *†E. Scott, *‡Gwennie Williams. *Part III:* Mary G. B. Allen, R. V. Berrington, C. H. Bradley, J. S. Bradshaw, R. S. Brock, Alison M. Brummitt, A. Cooke, J. W. Cowen, J. D. Craig, M. M. Datnow, Edwina M. Davies, L. Davies, R. Y. Dawbarn, Eileen M. Deane, W. T. Donovan, H. Duff, J. B. Elleray, H. W. Fell, H. R. Fisher, F. F. Fuller, G. A. Garrett, Susan Gluck, T. A. Griffiths, D. C. G. Hanlon, T. Hare, Fannie S. Holt, G. P. Huws, L. E. Johnson, R. W. Jones, R. Jones, A. L. Kerr, D. Kippax, J. Leggate, W. E. Lishman, J. H. M. Little, G. Lowe, G. Macdonald, Margaret S. Macdonald, Phyllis Marsh, G. A. Moulden, A. Newton, R. J. Prydderch, Gwendolen H. ff. Roberts, E. Rowlands, J. A. Scott, G. V. L. Taylor, Marjorie A. Unsworth, Mabel J. Watterson, N. Weinberg, H. S. Welton. *Part I:* R. M. Ainsworth, M. A. E. Azzam, H. E. Barrow, C. Baxter, B. H. Brickman, A. S. S. Brown, D. Cohen, J. Katz, Alice M. Luck, J. W. Melville, E. L. Murphy, Irene M. Neal, J. J. O'Donovan, Mary T. Penrice, W. J. Pierce, Mary A. Silcock, W. L. Webb. *Part II:* R. M. Ainsworth, H. W. Altschul, A. T. Ashcroft, Ethel Barrow, E. I. Bieber, ‖C. A. Birch, H. M. Boston, B. H. Brickman, W. G. Brookes, N. L. Corkill, R. F. Corlett, D. E. Davies, P. V. Dillon, J. L. Donnelly, ‖L. Earlam, J. C. Edwards, Sybil O. Edwards, ‖C. J. S. Garton, M. Goldberg, Dorothy A. Gough, Frances M. Greenhalgh, R. I. Greenshields, Gwyneth Griffith, C. A. Harris, ‖J. Hatton, Beryl M. Hawthorn, J. C. Heal, R. E. Horsfall, E. Hughes, ‖F. Hughes, S. M. Katz, C. Kaufman, B. Kay, J. E. S. Lloyd, W. J. Lloyd, ‖L. J. A. Loewenthal, T. R. E. Longton, H. McGrath, ‖G. McNichol, K. N. Mawson, J. W. Melville, F. Murgatroyd, E. L. Murphy, Winifred A. Nicholson, H. E. Pearson, H. Peaston, J. W. Reid, §Miriam Roskin, J. C. Ross, Ruth Simpson, N. P. Slade, I. Thomas, Margaret E. Thomas, E. F. Thompson, C. E. Unsworth, J. Unsworth, Rosalind Vacher, J. E. Walker, F. W. Yates.

D.P.H.—W. J. Birchall, R. W. Brookfield, B. L. Chopra, H. M. Cohen, F. S. Fowweather, E. S. Gawne, Annie R. Niven, C. J. de V. Shortt, J. F. D. Shrewsbury.

* Honours, second class.
† Distinction in medicine.
‡ Distinction in obstetrics.
‖ Distinction in forensic medicine and toxicology.
§ Distinction in public health.

## VICTORIA UNIVERSITY OF MANCHESTER.

THE following candidates have been approved at the examinations indicated:

FINAL M.B. AND CH.B.—Margaret A. Bromhall, W. C. V. Brothwood, T. A. Brown, *J. A. Crowther, Madge E. Edwards, R. Ellis, A. G. Forbes, P. Gregory, E. Holmes, ‡Winifred L. Horton, W. G. Howson, *Phyllis I. Kaufman, D. Kemp, *§Hilda M. Linford, F. R. Lockhart, Gladys F. A. McLean, Alice M. Orrell, T. Peirson, S. Pope, L. J. Prosser, A. Riley, W. M. Roberts, Eileen Sheehan, Dorothy Simmons, J. Sims, G. S. Smith, J. Troup, H. M. Turner, C. L. Walker, E. Whiteside, ‡C. Wilcocks, G. Williamson. *Surgery and Obstetrics:* A. R. Addey-Redfern, J. K. Barr, C. V. Brown, Stella H. Brown, Elsie Catlow, W. Chadwick, S. F. Clegg, Jenny D. Craig, S. Devine, Florence M. Duckworth, C. Eccleston, J. D. Farquhar, R. A. Ferguson, J. Haslam, G. H. Hayle, †A. H. Heyworth, Elizabeth G. Humble, A. M. MacGill, W. Mottershead, Ethel Morris, H. Penman, T. W. Rothwell, H. T. Simmons, A. B. Slack, R. Slater, H. C. Smith, R. Walshaw, S. E. Ward, S. Whalley, R. M. Williams, S. P. Wilson, K. K. Wood, P. B. Wood, F. Yates. *Forensic Medicine and Hygiene and Preventive Medicine:* R. S. Adam, W. Chadwick, T. E. Davies, C. R. Fielding, A. H. Heyworth, J. N. Hudson, T. W. Rothwell, R. F. Stubbs, J. M. Yoffey. *Forensic Medicine:* S. Bernstein, J. W. Graham, R. Slater, A. R. Somerford. *Obstetrics:* C. T. Marshall, J. Shlosberg, E. J. Warburton, J. M. Yoffey. *Surgery:* P. G. Johnson, R. F. Stubbs. *Medicine:* J. M. Yoffey. *Hygiene and Preventive Medicine:* Anne H. Glancy, E. J. Warburton.

* Second-class honours. † Distinction in obstetrics.
‡ Distinction in medicine. § Distinction in forensic medicine.

DIPLOMA IN PSYCHOLOGICAL MEDICINE, *Part II.*—L. C. F. Chevens, H. D. Cormac, T. W. Davidson, W. J. Lynch, W. R. McGlashen.
D.P.H., *Part II.*—F. R. Ferguson, Marjorie A. Grant, Gladys J. C. Russell, Enid F. Stowell, Ethel White.

## UNIVERSITY OF SHEFFIELD.

DR. G. A. CLARK has been appointed to a lectureship in physiology.

## UNIVERSITY OF LEEDS.

AT a congregation of the University, the Duke of Devonshire, the Chancellor of the University, conferred the following degrees in Medicine and Surgery:

CH.M.—D. Chamberlain.
M.B., CH.B.—*T. H. B. Bedford, *A. M. Claye, *H. Edelstein, *H. Ross, *J. G. Ward.
M.B., CH.B.—W. C. Abell, H. Bruce, A. Cannon, J. Cardis, Aileen N. Claye, F. Clegg, Maria L. Gaunt, G. D. Gordon, Muriel D. Graham, M. Hutchinson, J. W. Pickard, Kathleen M. Potter, L. N. Pyrah, N. A. Rymer, N. A. Scadding, G. H. Sellers, J. E. A. Simpson, G. R. Sunley, D. M. Sutherland, H. Taylor, W. Thistlethwaite, E. W. Vincent, Hester E. Woodcock, D. Yates.

* Honours, second class.

## UNIVERSITY OF ABERDEEN.

AT the graduation ceremony held on July 10th the honorary degree of LL.D., was conferred upon Dr. Michael C. Grabham, F.R.C.P.Lond. The following were among the other degrees and diplomas conferred:

D.Sc.—H. E. Magee.
M.D.—*W. Corner, O.B.E. (*in absentia*), *R. J. Duthie, *R. Forgan, *W. I. Gerrard, A. R. Grant, N. M. Maclennan, J. Rannie, R. Rannie, H. J. Thomson, I. S. Thomson.
CH.M.—R. D. Lockhart, F. H. B. Norrie, O.B.E.
M.B., CH.B.—‖A. M. Hendry, ‡§E. C. Chitty, ‡§R. B. Henderson, ‡§J. A. Innes, ‡§D. West, R. Anderson, J. H. Arthur, A. H. Benton, Kathline Booth, F. Buchan, A. S. Burns, W. Chisholm, Annie S. Clark, Mary Coutts, Edith Cran, Eirene V. Croll, J. Crombie, J. G. Currid, F. R. Daniel, D. Duncan, J. C. Forbes, S. Forrest, R. M. Fraser, Ethel L. R. Galloway, A. D. Garden, §W. C. Gorrod, J. Hutcheon, Penuel M. Innes, C. Joiner, D. W. Kirk, Flora H. G. Macdonald, J. Macdonald, T. J. C. Macdonald, R. H. Mackay, R. Mackay, R. Mackay, A. L. McLeod, D. McLeod, Christine Macrae, C. P. Murray, P. W. Philip, A. Reid, A. Reid, W. M. Ritchie, A. Rose, §C. J. Sandford, W. N. Simpson, J. M. Smith, A. Stalker, N. Taggart, G. J. MacA. Teunon, W. G. Watson, H. M. Wright.
D.P.H.—Catherine J. Clark, Eleanor M. Henderson, Charlotte S. Hendry, Roberta McLeish, Bethia M. Newlands, Violet M. G. Smith, J. S. Taylor, Gladys M. West.

* Awarded commendation for thesis.
† With first-class honours.
‡ With second-class honours.
‖ Completed final examination with much distinction.
§ Completed final examination with distinction.

## ROYAL COLLEGE OF SURGEONS OF ENGLAND.

A QUARTERLY Council meeting was held on July 10th, when the President, Sir John Bland-Sutton, was in the chair.

*President and Vice-presidents and Council.*

Sir John Bland-Sutton was re-elected President, and Mr. H. J. Waring re-elected and Mr. W. G. Spencer elected Vice-presidents for the ensuing year. Mr. W. McAdam Eccles, Mr. Wilfred Trotter, and Sir Charles Gordon-Watson, duly elected at the meeting of Fellows on July 3rd, were introduced and took their seats as members of the Council.

*Licences and Diplomas.*

Licences in Dental Surgery were granted to 63 candidates.

At the Primary examination for the Fellowship, concluded on June 18th, 100 candidates were examined, of whom 31 were approved. The names were published in the JOURNAL of June 28th (p. 1160).

Diplomas in Public Health were granted jointly with the Royal College of Physicians to 31 candidates.

Diplomas in Psychological Medicine were granted jointly with the Royal College of Physicians to 5 candidates.

Diplomas in Laryngology and Otology were granted jointly with the Royal College of Physicians to 5 candidates.

*Pathological Department of Museum.*

Mr. C. F. Beadles was reappointed Assistant Pathological Curator of the Museum, and Mr. C. E. Shattock was reappointed Pathological Assistant in the Museum for the ensuing year. The office of Pathological Curator of the Museum is to be left vacant for the present, and Mr. T. W. P. Lawrence, F.R.C.S., was invited to advise and assist Mr. Beadles and Mr. Shattock during the ensuing year in rearranging and revising the series of Special Pathology in the Museum.

*Library.*

The Library will be closed in August as well as in September for cleaning and redecoration.

*Lister Medal.*

The Lister Medal for distinguished contributions to surgical science, with the honorarium of £500, has been awarded to Sir W. Watson Cheyne, who, in accordance with the conditions of the trust, has undertaken to given an address at the Royal College of Surgeons on a day in 1925.

*Lectures.*

The following were elected to give lectures during the ensuing year:

*Hunterian Professors.*—Sir Arthur Keith: Six lectures on the evolution of the higher primates. R. L. Knaggs: One lecture on osteitis deformans and its connexion with osteitis fibrosa and osteomalacia. V. Zachary Cope: One lecture on extravasation of bile. A. H. Todd: One lecture on syphilitic arthritis. V. E. Negus: One lecture on disorders of the mechanism of the larynx. H. P. Winsbury White: One lecture on the pathology of hydronephrosis. S. Cade: One lecture on regional anaesthesia.

*Arris and Gale Lecturers.*—C. P. G. Wakeley: One lecture on the etiology, pathology, and treatment of ectopic and imperfect descent of the testis. G. Scott Williamson: Two lectures on the anatomy and physiology of the thyroid apparatus.

*Erasmus Wilson Lecturer.*—G. W. de Poulton Nicholson: Three lectures on the nature of tumour formation.

*Arnott Demonstrator.*—Sir A. Keith: Six demonstrations on the contents of the Museum.

*Appointments and Reappointments.*

Mr. R. H. Burne was re-elected Physiological Curator, and Sir F. Colyer was re-elected Honorary Curator of the Odontological Collection, for the ensuing year. Mr. D. Kennedy Cassels, B.A.Cantab., was appointed Assistant to the Secretary during the ensuing year.

## ROYAL FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW.

THE following have, after examination, been admitted Fellows of the Faculty: W. K. Anderson, J. T. H. Madill.

## LONDON SCHOOL OF TROPICAL MEDICINE.

THE following candidates passed the examination of this school held at the termination of the seventy-fifth session (April–June, 1924):

*A. W. Grace (winner of Lalcaca and Duncan medals), *P. B. Yodh, *W. Rae, *T. Creaser, *R. B. Wallace, *G. C. Ramsay, *R. Dick, Miss K. S. Captain, M. L. C. Irvine, V. D. Wyborn, Miss S. Russell, J. P. Fehily, W. Dunlop, Mrs. E. M. Gittins, S. Nag, R. G. Cochrane, J. A. Waterman, R. P. Bliss, H. G. D. Mathur, K. Ando, E. A. T. Pateman, F. T. Fisher, K. T. K. Wallington, Miss E. K. Mackay, C. G. Timms, Miss H. Keer, Miss C. B. Kibble, P. V. Casling, A. Esler, R. J. Gittins, R. MacGregor, Miss R. Scutt, W. S. Nealor, R. H. Stanbridge, Miss D. Mitchell, S. F. Allason, D. R. Nayar, H. W. Torrance, G. R. Waller, P. K. Dixon, Miss G. Webster, I. E. Meier, P. J. Caffrey, C. L. Stewart, C. R. Edibam, T. Chan Taik, T. Balmokand, G. F. T. Saunders, G. Khalsa, G. Pope, G. Elliot.

* With distinction.

# The Services.

## ROYAL ARMY MEDICAL CORPS.

*Examination for Promotion.*

IT is announced in Army Orders that, with effect from April 1st, 1925, the examination of majors of the Royal Army Medical Corps for promotion to lieutenant-colonel will consist of a written examination in army medical organization and administration in peace and war, and of a medical staff tour.

## DEATHS IN THE SERVICES.

Lieutenant-Colonel Adam Rivers Steele Anderson, Bengal Medical Service (retired), died at Branksome Park, Bournemouth, on July 5th. He was born on March 3rd, 1863, and educated at Cambridge, where he graduated B.A., with honours, in 1882, and M.B. in 1886; he was a student at St. Mary's, and took the M.R.C.S. in 1885 and the D.P.H. in 1889. After holding the office of resident medical officer at St. Mary's, he entered the I.M.S. as surgeon in 1889, became lieutenant-colonel after twenty years' service, and retired in 1918. After four years' military duty he was appointed surgeon naturalist to the Indian Marine Survey in March, 1893, and served on the Royal Indian Marine s.s. *Investigator*. In October, 1900, he became senior medical officer at Port Blair in the Andaman Islands, the great Indian penal settlement for life convicts, recently abolished as such. In May, 1906, he was transferred to civil employment in Bengal, and in April, 1912, became civil surgeon of Dakka, then the prize station of Bengal. In January, 1916, he returned to military duty for service in the late war, and remained at that duty till his retirement, two and a half years later.

Lieutenant-Colonel Anthony Lennon Brown, R.A.M.C. (retired), died at Pinhoe, Exeter, on July 6th, aged 81. He was educated at the Ledwich School, Dublin, and after taking the L.K.Q.C.P. and L.R.C.S.I. in 1866, entered the army as assistant surgeon in 1868. He attained the rank of brigade surgeon licutenant-colonel in 1894, and retired on December 15th, 1897. He served in the Ashanti war of 1873-74, was present at the battle of Amoaful, and in the advance on Kumasi, was mentioned in dispatches, and received the medal with a clasp; in the South African war of 1878-79, in the operations against the Gaikas, and in the Zulu campaign, he was present at the battles of Kambula and Ulundi, was mentioned in dispatches in the *London Gazette* of May 7th and August 21st, 1879 (medal with clasp); in the Sudan campaign of 1884-85, with the Nile column (medal with clasp, and Khedive's bronze star); and in the Sudan in 1885-86, with the Frontier Field Force, when he took part in the action at Giniss.

# Obituary.

## SIR SYDNEY RUSSELL-WELLS, M.D., F.R.C.P.,

M.P. for the University of London.

To the great sorrow of a wide circle of friends and colleagues, Sir Sydney Russell-Wells, M.P., died suddenly, as the result of a heart attack, on the afternoon of July 14th. He had been engaged in his consulting room up to within an hour of the fatal seizure. Although always of frail appearance, and giving an impression of lack of physical vigour, his energy in many fields, not limited to his profession, was so marked that his death at the comparatively early age of 54 was totally unexpected.

Sydney Russell-Wells was born in London in 1869, and received his early education at the Dorset County School. He entered University College, London, and graduated B.Sc. in 1889. He pursued his medical studies at St. George's Hospital, and obtained the Pollock prize in physiology, the Brackenbury prize in medicine, and the William Brown exhibition. Afterwards he became successively house-surgeon, house-physician, and medical registrar at St. George's. He settled in London and was appointed physician at the Seamen's Hospital, Greenwich, and to the National Hospital for Diseases of the Heart.

One of the features of his career was the service which he gave in many capacities and over a long period of years to the University of London. He became a senator many years ago, and was for a period chairman of the council for external students. In 1919 he was elected Vice-Chancellor, and held that office until his election to Parliament as member for the University at the end of 1922 in succession to Sir Philip Magnus. His ability as an administrator steered the university through the difficulties attending the reconstructive period which followed the war. His speeches on innumerable academic occasions showed his sympathy with and his intimate knowledge of every department of the university's work, and not medicine alone. One matter in which he particularly interested himself and brought to fulfilment was the establishment of a degree in commerce. Commerce is a field in which some members of his family have attained conspicuous success, and Sir Sydney could speak on commercial subjects with a knowledge rare in a medical man. He was also very keen on upholding every jot and tittle of university dignity and precedence. In 1923 he was again returned to Parliament with a majority over the combined total of his Liberal and Labour opponents. He was not exactly the kind of figure which fits in with parliamentary life, and whether he was quite happy in it was known only to himself. Once he jestingly compared the House of Commons to an asylum for mental disorder, where the warders were known as whips, and where the inmates were allowed out only in pairs. But he attended his duties in Parliament with zeal, and his speeches on all academic and medical questions were listened to with respect. His action with regard to the Dangerous Drugs (Amendment) Act will be remembered with gratitude by his profession. On the day he was first elected to Parliament he told the writer that he intended to consider himself particularly the "member for Medicine," in view of the large number of medical graduates of the University he represented.

He was a member of the British Medical Association, and many will recall his encouraging speech at the Annual Panel Conference dinner last year, when he expressed his conviction that in the insurance crisis then impending the profession had only to stand united, to trust its leaders, and to persevere in its struggle, and it would win the day.

Sir Sydney Russell-Wells had represented London University on the General Medical Council since the end of 1918. There he took an active part in the debates on the educational side of the Council's work and was a diligent member of its committees.

In private life he was a very unassuming, gentle man, readily approachable, and keenly interested in many subjects, but especially in science and mechanics, which were his recreations. He married, in 1895, the daughter of the late Mr. Stephen Smith, and Lady Russell-Wells survives him, with a son and two daughters.

The Medical Secretary of the British Medical Association writes: In Sir Sydney Russell-Wells the medical profession and the Association have lost a very good friend, who used his position in Parliament to advance their interests to the best of his ability. He took his responsibilities as a member of Parliament very seriously. He was always ready whenever approached to advise as to parliamentary procedure, to put a question in the House, to go and see a Minister or a departmental head, to sit on a committee, or in fact to do anything which he thought was likely to make him more useful to his profession. The news of his death came as a great shock, for one always associated with him the idea of intense activity and vivacity, and it is difficult to think of all that energy being suddenly lost. We on the staff will miss him very much as an adviser on parliamentary matters.

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Dr. DUNCAN MACFADYEN, a well known and highly respected practitioner of Inverness, died on June 29th. Born seventy-eight years ago in Argyllshire, he received his medical education at the University of Glasgow, and took the diploma of L.R.C.S.Edin. in 1869. He was able to carry on his professional work in town and country until a few weeks before his death. He was a dresser under Lord Lister in the old Royal Infirmary, Glasgow, in 1867. He commenced practice in Dalmally, Argyllshire. He was there for some years, and from there went to Ullapool and Beauly, and settled in Inverness forty-three years ago. During the time he was there he held several important appointments, civil and military, besides conducting a busy practice. Dr. MacFadyen was for more than forty years medical officer to the Inverness-shire militia, latterly the 3rd Cameron Highlanders. For over thirty years he acted as one of the medical officers to the Inverness parish council and as medical officer to the Inverness post office. Dr. MacFadyen completed his jubilee as a member of the medical profession in 1919; he was entertained to a complimentary dinner and presented with an illuminated address by his medical brethren in the North. A keen sportsman, he was often to be seen on some of our Highland lochs, and nearly always returned with a full basket. He was also a keen curler. Horticulture was one of his hobbies. He was a keen supporter of the Established Church, and a Conservative in politics. He is survived by two sons, the elder of whom, Dr. Duncan MacFadyen, *M.C.*, joint honorary secretary of the Northern Counties of Scotland Branch of the British Medical Association, is in practice in Inverness.

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Dr. ALFRED MANTLE, a well known Harrogate practitioner, who died suddenly on July 10th, aged 69, was educated at the London Hospital, where he won both medical and obstetrical scholarships. He obtained the diploma of M.R.C.S.Eng. in 1879, and graduated M.B.Durh. in 1880 and M.D. in 1882. Before going to Harrogate he practised in Halifax, where he was consulting physician to the Halifax Royal Infirmary, and represented the Halifax Division at the Representative Meetings of the British Medical Association from 1904 to 1907. He was an ex-president of the Harrogate Medical Society, and one of the trustees of the Holt Holiday Homes at Harrogate for Halifax people. He recently won the international prize essay competition with a contribution on the treatment of rheumatism, and published many other papers on this and kindred subjects. He had been a member of the British Medical Association since 1881; he was chairman of the Harrogate Division from 1916 to 1918, and was formerly a member of the Yorkshire Branch Council. A funeral service was held at St. Peter's Church, Harrogate, on Saturday, July 12th, at 3 p.m., previous to interment at Harlow Cemetery, Harrogate.

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Two leading members of the Leningrad Academy of Military Medicine, the physiologists Professor N. P. Krawkow and Professor Slowzow, have recently died.

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Dr. A. JALAGUIER, a well known Paris surgeon and member of the Académie de Médecine, has recently died at the age of 70.

# Medical News.

THE Maudsley Hospital has now been recognized by the Universities of London, Oxford, and Cambridge, and the Conjoint Examining Board of the Royal Colleges of Physicians and Surgeons, as an institution where undergraduates may take the course in mental disease preparatory to the qualifying examination. The University of London has also recognized the hospital for the post-graduate work for the M.D. examination in psychological medicine subject to the condition that an advisory committee should be appointed. It consists of two members of the teaching staff, elected by the staff, the medical superintendent of the hospital, the director of the pathological laboratory, and a member of the hospital subcommittee, who will act as chairman. Patients who leave the London county mental hospitals on trial or on discharge are to be given a card of instruction as to the facilities which exist at the Maudsley Hospital for obtaining advice and, if necessary, treatment.

NEGOTIATIONS have been completed for the purchase of a site on which to rebuild the Royal Ear Hospital, Dean Street, Soho. This site is situated on the corner of Huntley Street and Pancras Street, Bloomsbury, W.C., and is adjacent to University College Hospital and the new Rockefeller buildings. The chairman, Mr. Geoffrey Duveen, made it possible to commence this scheme by a gift of £15,000 to the hospital, as a memorial to his late father, Mr. Henry J. Duveen.

DR. DOUGLAS MCALPINE has been appointed physician to the department for nervous diseases at the Middlesex Hospital, in succession to Dr. H. Campbell Thomson, who had served on the honorary staff of the hospital for twenty-four years.

THE library of the new house in London of the Oxford University Press in Warwick Square (between Ludgate Hill and Newgate Street) is open to the public, and has a librarian in charge who will supply any information required.

THE Inter-State Post-Graduate Assembly, directed by the Tri-State District Medical Association, contains, we are informed, about 55,000 members in the United States. Some 300 intend to visit this country and Paris in June, 1925, under the leadership of Dr. W. J. Mayo, and will hold their annual congress in London. They will be in London from June 1st to 6th, and afterwards make a tour of England, Scotland, and Ireland. While in London they will visit various clinics. The general arrangements have been placed in the hands of Mr. Philip Franklin, F.R.C.S. (27, Wimpole Street, W.1), who is being advised by a committee consisting of Sir Humphry Rolleston, Bt. (President of the Royal College of Physicians), Sir William Hale-White, K.B.E. (President of the Royal Society of Medicine), Sir StClair Thomson, M.D., and Mr. H. J. Waring, M.S., F.R.C.S. The number of visitors to any hospital will be prescribed, and a series of lectures will be given at the house of the Royal Society of Medicine on June 2nd, 3rd, and 4th. It is expected that the party will consist as to one-fourth of specialists, and that the remainder will be surgeons and physicians in equal proportions. The party will go to Dublin on June 7th and will spend the two following days there; the arrangements are in the hands of Sir William de Courcy Wheeler. From Dublin the party will go to Belfast and then to Glasgow and Edinburgh, where arrangements are being made by Sir Harold Stiles. From Edinburgh they will go to Liverpool, arriving there on June 18th. The party will then divide, some remaining in Liverpool, where arrangements have been made by Sir Robert Jones, others proceeding to Manchester, where Sir William Milligan will be in charge, and others to Leeds, where they will be under the guidance of Sir Berkeley Moynihan. Instead of going to Liverpool members may select to go to Newcastle, where Mr. Grey Turner is making plans for them. The party will return to London on June 21st and then proceed to Paris, where Professor Tuffier is making arrangements for their reception.

DR. JAMIESON B. HURRY, in honour of his daughter's wedding, has presented the royal borough of Reading with another historic picture dealing with Reading Abbey. This picture, painted by Mr. E. Board, shows Edward IV and his Queen, Elizabeth Woodville, at the Abbey Church on Michaelmas Day, 1464. The presentation of the picture to the town was made on July 1st at the meeting of the Reading Town Council. In asking the Corporation to accept the picture, Dr. Hurry said he did so in the hope that it might please the townspeople of Reading as a work of art, and that it would be of interest to the children in the schools. This is the ninth picture presented to Reading by Dr. Hurry, whose researches and archaeological enthusiasm are known, not merely to his fellow townsmen, but to many members of his profession.

DR. DAVID MURRAY LYON, assistant physician to the Royal Infirmary, Edinburgh, has been appointed Christison Professor of Therapeutics in the University of Edinburgh in succession to Dr. J. C. Meakins, who has become Professor of Medicine at McGill University, Montreal, and director of the new university medical clinic established by the gift of the Rockefeller Foundation in connexion with the Royal Victoria Hospital, Montreal.

LIEUT.-COLONEL E. D. W. GREIG, C.I.E., late I.M.S., has been appointed lecturer in tropical medicine in the University of Edinburgh. Colonel Greig graduated at Edinburgh in 1895, afterwards became assistant to the professor of pathology, University College, London, and entered the Indian Medical Service in 1899. He served on the Sleeping Sickness Commission of the Royal Society in Uganda, and was appointed a Director of Medical Research, India, in 1921.

TO meet the difficulty explained by Mr. Maunsell, President of the Royal College of Surgeons in Ireland, last week (p. 77) there has been introduced into the Free State Dail a bill to continue the authority of the General Medical Council and the operation of the Medical Acts for one year, in order to afford time to make such arrangements as may seem best.

THE Queen's University, Belfast, will receive under the will of Mr. J. C. White, formerly Lord Mayor, the sum of £60,000—£45,000 for the department of biochemistry, and £15,000 for the department of bacteriology.

IN connexion with the appeal for the Sir Malcolm Morris Fund, published in our columns of May 10th (p. 841), we are informed that the sum received up to July 14th is £109 8s. 2d. Further subscriptions will be gratefully acknowledged if forwarded to the honorary treasurers, Sir Malcolm Morris Memorial Fund, 12, Stratford Place, London, W.1.

DR. J. R. WHITWELL, on the occasion of his retirement from the post of medical superintendent of St. Audry's Hospital for Mental Diseases, Melton, Suffolk, which he held for twenty-seven years, has been presented by the members of the committee of the hospital with a handsome present of table silver, each article being inscribed with the name of one member of the committee of twenty-four. Dr. Whitwell was president of the Suffolk Branch of the British Medical Association for 1923-24.

A LARGE party of medical students from Bristol University visited the bathing establishment at Bath on July 11th to study the practical application of medical hydrology at the hot mineral baths. They were received by Mr. John Hatton, director of the baths, and after going over the establishment and seeing various demonstrations heard a lecture from Dr. Vincent Coates on the types of diseases chiefly treated at Bath.

MR. W. H. S. JONES has edited the earliest Greek, Latin, and Arabic MSS. of the "Hippocratic Oath," the famous medical oath upon which the ethical rules of the profession have been based. In addition to the MSS. the volume will contain translations, an essay, and an appendix; it will be entitled *The Doctor's Oath: An Essay in the History of Medicine*, and will be published by the Cambridge University Press.

AN Italian league for combating venereal diseases has recently been founded at the suggestion of Professor Ettore Levi.

THE twenty-third Flemish Congress of Natural Science and Medicine will be held at Aalst on August 9th and 10th.

A COURSE in cutaneous and venereal diseases will be held at Strasbourg from September 22nd to November 8th, under the direction of Professor Pautrier. The fee is 200 francs.

THE next award of the Umberto I prize of the Rizzoli Orthopaedic Institute in Bologna will be made next year. Full particulars can be obtained on application to the president of the Instituto Ortopedico Rizzoli, Bologna.

THE German Pediatric Society will hold its annual meeting at Innsbruck from September 18th to 20th, when the following subjects will be discussed: Immunobiology of tuberculosis, by Bessau of Leipzig; The pathological anatomy of tuberculosis in children, by Koch of Freiburg; The clinical aspects of tuberculosis, especially of the lungs and bronchial glands, by Engel of Dortmund; Roentgenology of the thoracic organs, by Hans Wimberger of Vienna; Roentgenology of the abdominal organs, by Rupprecht of Leipzig.

THE Société d'Anthropologie of Paris, which was founded in 1859 by Paul Broca, has recently celebrated the centenary of his birth.

A BUST of the late Professor Blanchard, the well known parasitologist and authority in tropical medicine, has recently been unveiled at his birthplace, Saint-Christophe, in Touraine.

THE late Mr. Forbes Fraser, C.B.E., of Bath, who died on May 28th, has left property of the value of £19,464, with net personalty £13,383.

# Letters, Notes, and Answers.

*Communications intended for the current issue should be posted so as to arrive by the first post on Monday or at latest be received not later than Tuesday morning.*

THE telephone number of the BRITISH MEDICAL ASSOCIATION and BRITISH MEDICAL JOURNAL is Gerrard 2630 (Internal Exchange). The telegraphic addresses are:

EDITOR of the BRITISH MEDICAL JOURNAL, *Aitiology Westrand, London.*

FINANCIAL SECRETARY AND BUSINESS MANAGER (Advertisements, etc.), *Articulate Westrand, London.*

MEDICAL SECRETARY, *Mediocris Westrand, London.*

The address of the Irish Office of the British Medical Association is 16, South Frederick Street, Dublin (telegrams: *Bacillus, Dublin*; telephone 4737, Dublin), and of the Scottish Office, 6 Rutland Square, Edinburgh (telegrams: *Associate, Edinburgh*; telephone, 4361, Central).

## QUERIES AND ANSWERS.

### EMULSIFICATION OF COD-LIVER OIL.

"PHARMACY."—There is no more efficient or cheaper method of emulsifying cod-liver oil on a small scale than that of trituration of the oil with gum acacia and water. For success it is necessary that the oil should be subdivided while the viscosity of the mixture is high; after dilution of the mixture with water the oil globules cannot be further subdivided in a mortar. Favoured proportions of the mixture for the trituration are eight, two, and three parts respectively of oil, gum, and water, in the order named. After emulsification is complete the mixture may be diluted with water *ad libitum*. With larger quantities comminution of the oil may be effected by the use of a garden syringe fitted with a nozzle for fine spraying, the mixture being diluted for this purpose with a larger proportion of water. Good emulsification by the latter method requires the application of considerable muscular strength. Manufacturers use engine power for the corresponding operation.

### INCOME TAX.

*Cash Basis.*

"INNOCENCE" puts two questions with regard to the results of a change in proprietorship of a practice, the profits of which have been assessed on a cash basis; the tenor of the inquiries may be sufficiently clear from the following replies.

*** We must first emphasize the fact that an assessment on a medical practice relates to the profits earned in the year of assessment; the method of taking those profits as being the excess of the cash receipts over the cash payments is only a convenient though theoretically incorrect way of arriving at a reasonable amount to be assessed. From this it will be clear that when tax has been paid in respect of a series of years to, say, April 5th, 1924, then tax has been accounted for in all the earnings to that date, whether those earnings have been received in cash or remain on the books. If "Innocence" will bear this principle in mind he will see that the answers to his two questions must be as follows: (1) A cannot deduct as an expense what he paid for the outgoing partner's book debts—that was a capital transaction purely; neither is the latter liable to tax in respect of those debts which represent past earnings. (2) The new proprietors may, of course, discard the cash basis and base their returns on (average) bookings less bad debts; but if they wish to continue the cash basis they must bring in the whole of the receipts, otherwise the result would be an index of something less than the full earnings of the practice for the year of assessment, and for that year the whole of the earnings are divisible between "Innocence" and his partners. The outgoing partner is not liable to tax on the debts recovered and handed over to him.

"X. Y. N. B." explains that when he retired on October 3rd, 1922, he settled his liability with the inspector of taxes on the basis of paying on money received by the firm up to the date of his retirement. Another inspector now seeks to reopen this settlement.

*** If—as we presume was the case—the Schedule D liability was based on past average profits, the result of deducting from that average sum an amount based on the actual transactions of the year might be to leave too large a residuum to fall on the shoulders of his partner or successor. The correct basis of settlement would have been for "X. Y. N. B." to account for his liability as being on one-half of what it would have been if he had remained in the practice to April 5th, 1923—less, of course, the appropriate allowance. In any case he is not liable to pay tax on book debts after October 3rd, 1922, as such—see reply to "Innocence" in this issue. If "X. Y. N. B." can call on the inspector he might be able to arrive at some reasonable settlement on these lines.

### MOTOR EXPENSES.

DR. RUPERT B. HICK (Peckham) writes: With reference to the inquiry of "J. G. S." *re* allowance for car expenses (July 12th, p. 87), he will find the *Motor Car Log Book* what he wants for keeping accurate records of the use of his car. It is obtainable from Mr. L. A. H. Stovell, 11, Alexandra Terrace, Exeter, price 1s. 1½d. post free. It is extremely simple, a couple of minutes a day being sufficient to record all running expenses of the car, including mileage, petrol, oil, tyres, repairs, etc. I have one in use which I started at the commencement of the current financial year for income tax purposes, and I do not think any inspector could refuse to recognize it.

## LETTERS, NOTES, ETC.

### THE CANCER INQUIRY AT LIVERPOOL.

"ANOTHER REPORTER" writes: I am bold enough to break a lance in defence of my craft. Because a Liverpool journalist reported him as saying, "some, if not all," when he actually said, "some, though not all," Dr. Adami (July 12th, p. 80) speaks harshly of "incompetent and irresponsible reporters," and is at a loss to discover any excuse or explanation for such perversion of his words. Compared with the misreportings which occur daily in the press the Liverpool reporter's fault seems venial, however unfortunate the consequences. Reporters should be impeccable, of course, but would it not be more just in this case to say that both the reporter and Dr. Adami were the victims of misfortune in that a vital distinction was made to depend entirely upon a conjunction in a single sentence without, apparently, anything else in the speech to support it? It is perhaps no defence to plead that the shorthand forms of "if" and "though" are similar, but the reporter might urge some support (see *Century Dictionary*) for the view that the words are interchangeable—that is to say, "if not all" may have the force of "though not all." Mr. Gladstone was once misreported in like manner, and the offending journalist told me with what trembling he awaited the next speech of the great man. But Gladstone was too magnanimous—perhaps too wise—to blame "incompetent and irresponsible reporters." He passed the error by, although his mangled speech had raised the dust, by saying, "A slip of the pen, or a slip of the tongue, no matter which." In my experience medical orators are similarly indulgent, though not all of them would go the length of a certain President of the British Medical Association whom I heard tell the journalists at the Annual Representative Meeting that he did not mind what they made him say, he asked only one thing of them, that they should spell his name correctly!

### CARDIAC PHYSIOLOGY.

DR. MICHAEL B. SHIPSEY (Erdington, Birmingham) writes: Sir J. Mackenzie (June 28th, p. 1122) says the "law of all or nothing" is not true for the heart contracting in certain circumstances. I pointed this out in a booklet I wrote three years ago; I there stated that the heart at times in disease contracts only 1/2 or 1/6 or 1/20, etc., of a "full contraction." Sir J. Mackenzie calls this the "law of fluctuation." He may call this truth by whatever name he likes, but I think he should acknowledge the full force of my statements. I do not agree with his (1) "the stimulus for contraction of the ventricle arises as impulses thrown out by the sino-auricular node"; (2) "these impulses are not electrical." I hold contrary views, elaborated elsewhere. In passing, might I point out that full contraction (systole) and full diastole are very vague terms; if we compare the heart to a thermometer that expands to 100° F. and contracts to 25° F. at each beat when utilized to their utmost limits, then the amplitude of those beats in the same heart must vary according to exercise, age, meals, fevers, etc., and the hundred other causes that influence the mechanical elastic heart muscle.

### UNREGISTERED DENTAL QUALIFICATIONS AND DESCRIPTIONS.

THE Registrar of the Dental Board of the United Kingdom writes to say that, as many dental practitioners will shortly be revising the entries of their names in telephone and other directories, he is directed to draw attention to clause 4 (*b*) of the Dentists Act, 1921, which states that a person registered under the principal Act—

> (*b*) shall not take or use, or affix to or use in connexion with his premises, any title or description reasonably calculated to suggest that he possesses any professional status or qualification other than a professional status or qualification which he in fact possesses and which is indicated by particulars entered in the Register in respect of him.

The Registrar adds that under the Dentists Act, 1878, foreign (for example, American) qualifications cannot be registered by British subjects unless they have practised for over ten years elsewhere than in the United Kingdom, and membership of an institute of hygiene is not a registrable qualification.

### VACANCIES.

NOTIFICATIONS of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 35, 36, 37, 40, and 41 of our advertisement columns, and advertisements as to partnerships, assistantships, and locumtenencies at pages 38 and 39.

A short summary of vacant posts notified in the advertisement columns appears in the *Supplement* at page 24.